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City characteristics, migration, and urban development policies in India

Mahendra K. Premi
with Judith Ann L. Tom

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PREFACE

The first draft of this paper was prepared during 1980–81 while the first author was a research fellow at the East-West Population Institute. It was substantially revised during the summer of 1983. The paper was presented in two seminars—one at the National Institute of Urban Affairs, New Delhi, and the other at the Department of Demography, Australian National University, Canberra. It was further revised during June and July 1984 in the light of comments by the referees, other readers, and participants in two seminars.

We wish to thank both the East-West Population Institute and the Australian National University for providing necessary facilities for carrying out this research. We are grateful to James T. Fawcett for incorporating our research as part of the East-West Population Institute's program on Urbanization, Migration, and Development.

We are indebted to S.R. Srivastava, Poonam Natarajan, Jashomayee Devi, and several others who collected the necessary data for this project from the Directorates of Census Operations in the state capitals in India even before the data were formally published. Kusum Premi helped in transferring data to computer files, editing, and cleaning them, and we are grateful to her. We wish to thank Purveen Nangia and Zohair Anwar for preparing the diagrams and map. We also wish to thank for their valuable comments the four anonymous reviewers of the paper; certain other readers, especially Professors C.D. Deshpande, J.C. Caldwell, and D.B. Gupta; and the participants in the two seminars. Finally, we appreciate the meticulous editing of Tina Clark and Sandra Ward.

ABSTRACT Using 1971 census data and focusing on the city characteristics of size, growth rate, functional specialization, period since city status was attained, and regional location, this paper examines the phenomenon of migration to Indian cities. A schematic model is used to portray the relationship between the dominance of intradistrict, interdistrict, and interstate migration streams on one hand and the characteristics of the migrants and of the cities on the other.

Although movement to cities from rural areas was the dominant migration stream in the past, the recent trend indicates a shift toward urban-to-urban migration. Lifetime migrants have a lower sex ratio than the nonmigrants but a higher proportion of educated persons. Moreover, the proportion of workers in white-collar jobs is significantly higher among migrants than among nonmigrants.

Cities with dominant intradistrict migration streams have proportionally fewer lifetime migrants in their populations than other cities. They also have low sex ratios among migrants (below 100) and fewer migrants who are well educated. These cities are mostly of local importance in the national economy. In contrast, cities with high proportions of interdistrict or interstate migrants, especially the latter ones, have higher sex ratios among their migrants, higher proportions of better educated persons, and larger proportions of them engaged in white-collar occupations than the nonmigrants. These cities are mostly of regional and national importance economically.

When used as explanatory variables, the city characteristics together explain about two-fifths of the variations in the proportions of lifetime migrants or the current inmigration rates. Regression analysis using the strength of different migration streams and certain characteristics of the migrants, however, improves the amount of explained variance to about three-fifths, and even more in some cases.

A final section of the paper examines urban development policies of the Government of India and the state governments in light of the findings of the present study and suggests policies for the future.

The literature on urbanization and migration has focused attention largely on the analysis of rural-to-urban migration. Economists have suggested various models to explain the volume and direction of labor mobility (Lewis, 1954; Ranis and Fei, 1961; Todaro, 1968, 1969, 1971, 1975, 1976; Harris and Todaro, 1970; Greenwood, 1971: Johnson, 1971; Fields, 1972). They have generally assumed that developing countries have experienced mostly rural-to-urban and possibly some urban-to-urban migration. Microlevel studies have also been conducted to increase understanding of the behavioral patterns of the migrants and the dominant factors responsible for the decision to migrate. Most of these studies have concentrated on the primate cities of the developing countries and cities in the more developed world. (For an interdisciplinary review of macro and micro approaches to migration decision making, see De Jong and Gardner, 1981.)

It is not only the primate city of a country, however, that attracts migrants from rural and other urban areas. Other cities, which may be termed intermediate cities, also attract large numbers of migrants. Together with the primate and other metropolitan cities, they form a system in which most of the country's economic, cultural, political, and administrative activities take place. A useful way to study urbanization and migration, particularly migration, is to consider the set of cities as a system that is different from rural or noncity urban areas in its functions. This approach to the study of urbanization and migration is important for several reasons.

First, studies utilizing economic models have basically focused on labor mobility in explaining rural-to-urban migration. They have generally neglected urban-to-urban migration, which in India has become quite important in recent years and is likely to play a major role in population redistribution during the 1980s and 1990s. As the characteristics of urban-to-urban migrants are likely to be different from those of rural-to-urban migrants, in studies of cityward migration both rural-to-urban and urban-to-urban migration should be taken into account and analyzed separately.

Second, although studies of individual cities based on mover-stayer or place-utility and other models have helped to explain migration behavior by analyzing the role of migration in the growth of those cities and differences between the migrants and nonmigrants, their results may not be amenable to generalization. For example, findings of the Zachariah (1968) study of Bombay may not be replicated in Calcutta, Delhi, or Madras and therefore generalized for all the metropolises of India. In contrast, migration studies based on all cities of a certain minimum population and on noncity urban areas are likely to lead to more meaningful generalizations.

Third, when all cities of a country that have a certain minimum population (say 100,000) are considered together, they can be grouped according to size, past growth pattern, functional specialization, regional location, and other variables. Migration studies that use such groupings as classificatory variables might prove quite interesting and useful.

Fourth, although a large amount of migration to urban areas involves men who move for economic reasons, substantial numbers of women, children, and the elderly also move; and sometimes they constitute a larger migration stream than males of working age. Substantial differences are likely to exist between different categories of cities in the sex and age composition of their migrants. Moreover, from a demographic viewpoint it is important to consider migration to cities, or urbanward migration, in its totality.

Fifth, many of the less developed countries (LDCs) have been making serious efforts to reduce their population growth rates to replacement levels (net reproduction rate = 1) in the near future, possibly by the end of this century. On the assumption that this goal can be achieved, the two major factors in future urban growth will be the emergence of new towns and cities, and migration to existing cities and towns. To project future trends more realistically, it is necessary to have a clearer understanding of recent patterns of migration to existing urban areas.

The final rationale for the proposed approach to the study of urbanization and migration is that in most developing countries a substantial part of the urban growth that has occurred between two successive censuses is due to migration. Furthermore, migration to the primate city and to other metropolitan and intermediate cities accounts for about two-thirds or more of the total urbanward migration in many countries. Hence, it will be fruitful to study migration to all cities according to their characteristics because it will help to clarify the pattern of migration and the characteristics of the migrants.

With these reasons in view, this paper attempts to break new ground in the study of internal migration, using India as an example. Drawing on migration data from published tables of the 1971 census, it describes the pattern of cityward migration to India's 147 urban agglomerations[1] and to cities with populations of 100,000 and over. It also compares the characteristics of migrants and nonmigrants. The final section examines the population distribution policies of the Government of India and suggests policies for the near future in the light of the analysis.

---

[1] An urban agglomeration in India comprises a main city and other cities, towns, and developments such as a railway colony or university campus in close proximity that form a continuous spread with the main city and whose day-to-day economy is closely linked with the main city. According to the 1971 census, the Calcutta urban agglomeration, or metropolitan area, had 74 constituent units spread over five districts.

PREVIOUS STUDIES

The Research Programmes Committee of the Indian Planning Commission sponsored city surveys during the 1950s and early 1960s that described the growth of the selected cities during the first half of this century, the pattern of inmigration to them, and the characteristics of the inmigrants vis-à-vis those of nonmigrants (for example, Sovani et al., 1956; Malkani, 1957; Iyengar, 1957; Mishra, 1959; Sen, 1960; Dhekney, 1960; D'Souza, 1968). Comparing nine of those surveys covering the cities of Baroda, Gorakhpur, Hubli, Hyderabad-Secunderabad, Jamshedpur, Kanpur, Lucknow, Poona, and Surat, Bulsara (1964) concluded that industrial cities attracted a larger proportion of inmigrants than did nonindustrial cities. Although rural migrants moved largely within the same district or to a nearby metropolitan city, urban migrants traveled farther in search of employment and most of them were literate, some with primary and some with middle and high school education. Those from rural areas constituted a majority of migrants in some cities (ranging from 52.8 percent in Hyderabad-Secunderabad to 82.3 percent in Jamshedpur, for instance) but in Baroda they represented only 40.8 percent. The number of migrants from urban areas grew steadily and indicated increased interurban mobility. Other important studies about migrants to cities have been conducted by Rao and Desai (1965) on Delhi, Mitra (1963, 1970) on Calcutta and Delhi, Chauhan (1966) on Agra, and Lakdawala (1963), Zachariah (1968), and Gore (1970) on Bombay.

Zachariah's study of the migrants to Greater Bombay indicates selectivity in age, sex, marital status, and family status. Adolescents and young adults constituted a larger proportion of migrants than of nonmigrants in Bombay or of the population of the migrants' places of origin. In each sex-age group, the proportion single was smaller among the migrants than among nonmigrants in Bombay but greater than among the populations of the states of origin. The high sex ratio (number of males per 100 females) among migrants was due not only to high rates of inmigration of single males but also to the migration of married men unaccompanied by wives and children. The educational attainment of the migrants to Bombay was much higher than that of the populations of the states of origin but lower than that of nonmigrants in Bombay. Work participation rates of the migrants were higher than those of the nonmigrants in each age group. The overrepresentation of the migrants in blue-collar and unskilled manual occupations, and of nonmigrants in white-collar occupations, was due mainly to the difference in educational attainment (Zachariah, 1968: 340–42).

From 1961 census data on migrants to large cities (those with 100,000 or more inhabitants) according to their origin, length of stay at their destination, certain characteristics of the migrants, and the functional specialization of the cities, Mitra (1967b) concluded that the proportion of migrants who had lived more than three years in the place of destination was much greater in manufacturing cities than in others. The sex ratio, although above 100, became somewhat more favorable to females who had resided in the cities longer, and this change indicated the growing stability of the migrants. In administrative and service cities, city-to-city migration was much stronger than in cities having other functional specializations. In contrast to Zachariah's finding, Mitra found the ratios of the literates and educated to be consistently higher among inmigrants than among the total populations of those cities.

Mitra et al. (1980) analyzed the pattern of inmigration to 101 Indian cities during 1961–71 in relation to the industrial structure of their male work forces and the concentration of capital investment in those cities during 1971. The results of the analysis indicate that in 66 of the cities a majority of the migrants came from rural areas. Interstate migration of adult males exceeded intrastate migration in the biggest class I cities[2]—that is, rural migrants to those cities tended to come from far-off rural areas—whereas intradistrict migration was prominent in smaller class I cities. About 40 to 50 percent of the migrants were illiterate or semi-literate (having up to five years of schooling). With few skills and little education or training, most of them were engaged in low-grade production activities, indigenous means of transport (e.g., rickshaws, handcarts, horse-drawn carriages), or low-grade services; some worked in petty retail trade and personal services. Few had found employment in administrative, technical, professional, or kindred services (Mitra et al., 1980:67). The researchers found a positive relationship between the number of migrants from urban areas and the magnitude of capital investment in the organized sector.

---

[2] The Indian census classifies urban settlements into six size categories: I, 100,000 and over; II, 50,000–99,999; III, 20,000–49,999; IV, 10,000–19,999; V, 5,000–9,999; and VI, fewer than 5,000.

Using 1961 census data and principal-component analysis, Mahmood (1975) analyzed the characteristics of inmigrants to class I cities and found that long-distance industrial pull, youthfulness of the migrants, rural push with weak industrial pull, short-distance industrial pull, old-age migration, and service pull (in that order of importance) explained 81.2 percent of the variance in migration to the various cities.

In a recent study on urban outmigration Premi (1980:102) observed that migrants from selected small towns to class I cities comprised 47 percent of total outmigrants when transfer cases (considered to have moved involuntarily) were ignored.

Reviewing the research findings on social change and internal migration from Africa, Asia, and Latin America, Simmons et al. (1977) summarized the characteristics of migrants in Asian countries. They found that, because of greater employment opportunities available for the 15–24 age group, migrants to urban areas are most likely to be young adults eligible for work or eager for marriage. Such migrants are frequently underemployed in the rural homestead but believe that they are likely to find jobs in urban areas. As migration reflects a response to employment opportunities, the less developed a country is, the more males dominate its migration streams (Simmons et al., 1977:54).

As for skills, Simmons et al. concluded that people who migrate are not the "dregs of society" or the vast pool of illiterate labor, which classical models might predict, but more educated than those they leave behind. The reasons for this high degree of educational mobility include the greater employment opportunities for the educated and the greater amount of information available to them (Simmons et al., 1977:55–58). Prachuabmoh estimated that in Thailand 10 percent of migrants had seven or more years of schooling as compared with 2 percent of nonmigrants; Malaysia showed the same result (Simmons et al., 1977:55).

Greenwood's analysis of rural-to-urban migration in India showed that economic factors, such as transportation costs, income, and job opportunities, dominated individual decisions to migrate to a city.

Migrants to cities from both rural and urban areas tended to come from places nearby, but this tendency seemed to be significantly more pronounced for rural-to-urban than for urban-to-urban migration. Rural and urban persons alike were found to migrate to rapidly growing cities, perhaps because of the rapidly growing job markets there (Greenwood, 1971:261).

A growing body of evidence in the Asian and Pacific region indicates that migrants tend to come from better-educated segments of their original populations. The continuing high attraction of primate cities seems to be due to their offering the greatest array of occupations for persons at all skill levels, and particularly for those without "urban" skills (United Nations, ESCAP, 1977:5). The concentration of educational institutions, particularly those of higher learning, in big cities means that persons desiring more education must locate themselves where the facilities exist; consequently "more education" becomes a reason for migration. Moreover, the ESCAP study projected, in the process of economic development the volume and rate of female migration will increase and sometimes outnumber male migration, especially in centers where the demand for services requiring clerical and domestic workers is high (United Nations, ESCAP, 1977:5).

In summary, we observe that a majority of migrants to the Indian cities came from rural areas. A large proportion of them were from nearby rural places and went to comparatively small cities. Migrants from urban areas in general traveled longer distances, some of them contributing to migration between the cities, and these migrants more often went to administrative and service cities. There was selectivity of migrants with respect to sex, age, marital status, and family status; but with economic development and increased demand in clerical and domestic-service occupations, the probability of greater migration of females also occurred. All the studies we reviewed indicated that migrants were better educated than those whom they left behind, but there was little evidence of their being better educated than people in the places of destination. One study even indicated lower educational attainment of the migrants than of people at the destination. Desire for more education was found to be a reason for migration. Some studies concluded that migrants were overrepresented in blue-collar occupations or the urban informal sector and only a few had managed to find white-collar jobs.

In the present study, which is based on secondary data from the

1971 census, we attempt to analyze the volume and pattern of inmigration to cities with populations of 100,000 and more. Differentials in demographic, social, and economic characteristics of the migrants are examined according to characteristics of the cities to which they migrate. The paper also considers the extent to which findings of earlier studies are corroborated by data for all the cities of India and how far they need to be modified in the light of the new evidence.

MIGRATION TYPE AND MIGRANT CHARACTERISTICS: A MODEL

Because earlier studies on migration have generally focused on interstate and interdistrict migration, they have missed an important component of migration, which takes place within the district of enumeration—i.e., intradistrict migration.[3] To provide better understanding of the migration process, this study analyzes movement to cities from all three migration streams—intradistrict, interdistrict, and interstate. The relationship between the dominance of a particular migrant stream and the characteristics of its migrants can be described by the following model (also depicted in Figure 1):

> Cities experiencing high rates of intradistrict migration are likely to have substantial numbers of poor, less educated people who are unable to go long distances for employment and a large amount of female migration due to marriage. Such cities are therefore likely to have lower sex ratios among their migrants, lower literacy rates and educational attainment, and higher rates of participation in economic activity among females than other cities. They are also likely to be of local importance in the regional economy.
>
> If interdistrict migrants are mainly from rural areas and their characteristics are similar to those of intradistrict migrants, their destinations are also likely to be similar. If, however, interdistrict migrants have higher sex ratios, higher literacy rates, and higher

---

[3] For administrative purposes, India is divided into 22 states and nine union territories. The states and some of the union territories are subdivided into slightly more than 400 districts, about 1,800 *tahsils* or *talukas,* and more than 5,000 community development blocks. The districts are the basic administrative and planning units, and large amounts of census and other administrative data are published about them regularly. The population of a district is generally around 1.5 million persons.

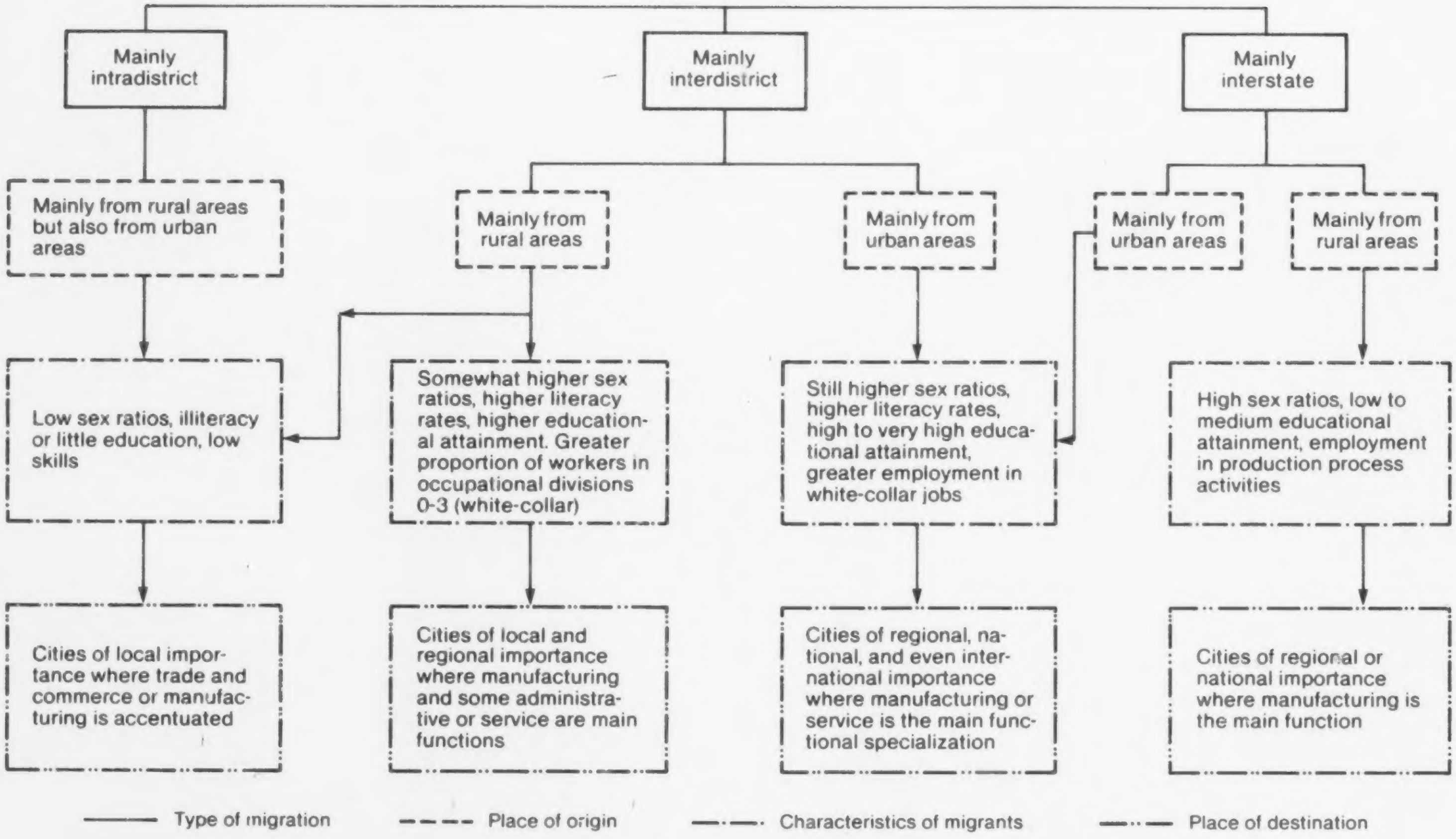
Mainly intradistrict
Mainly interdistrict
Mainly interstate
Mainly from rural areas but also from urban areas
Mainly from rural areas
Mainly from urban areas
Mainly from urban areas
Mainly from rural areas
Low sex ratios, illiteracy or little education, low skills
Somewhat higher sex ratios, higher literacy rates, higher educational attainment. Greater proportion of workers in occupational divisions 0-3 (white-collar)
Still higher sex ratios, higher literacy rates, high to very high educational attainment, greater employment in white-collar jobs
High sex ratios, low to medium educational attainment, employment in production process activities
Cities of local importance where trade and commerce or manufacturing is accentuated
Cities of local and regional importance where manufacturing and some administrative or service are main functions
Cities of regional, national, and even international importance where manufacturing or service is the main functional specialization
Cities of regional or national importance where manufacturing is the main function
Type of migration
Place of origin
Characteristics of migrants
Place of destination

FIGURE 1. Model of migration flow according to the origin and characteristics of migrants

> educational attainment than intradistrict migrants, proportionally more of them are likely to have white-collar jobs and go to cities of local and regional importance—cities in which manufacturing and some administrative and service functions predominate.
>
> Interdistrict migrants from urban areas are likely to have higher sex ratios and higher literacy rates than other interdistrict migrants, high to very high educational attainment, and employment in white-collar jobs in greater proportion. These migrants are likely to go to cities in which manufacturing or service is the main functional specialization and which are of regional, national, or even international importance.
>
> Interstate migrants from urban areas are likely to possess characteristics similar to those of interdistrict migrants from urban areas and are likely to follow the same path.
>
> Interstate migrants from largely rural areas will have the highest sex ratios but low to medium educational attainment. They are likely to be engaged in production process activities at their destinations. They will therefore tend to go to manufacturing cities of regional and national importance.

The earlier studies indicate that migrants to cities tend to have less education than the populations at the destinations and most of them find work in blue-collar or other low-paid urban occupations. These studies have counted migrants along with nonmigrants at destinations or compared recent migrant workers with total workers. But migrants, being young, are largely in their first or second jobs, whereas other workers belong to all ages and might have changed their jobs several times, thus being upwardly more mobile. Hence, such comparisons are not particularly valid. Cities send their highly qualified and trained workers to other cities, to noncity urban areas, and sometimes to rural areas. Hence, we are of the view that migrants generally possess higher levels of education and skill than nonmigrants and that they are likely to be engaged in white-collar jobs in greater proportions than the nonmigrants.

THE DATA BASE AND ITS LIMITATIONS

Census migration tables

The 1971 census included three questions about migrants. The first, on birthplace, asked specifically about the name of the place of birth, whether it was rural or urban,[4] the district of birth, and the state or country of birth. The second question, on last residence, also had four parts–on place of last residence, rural or urban designation,[5] district, and state or country. The third question was about duration of residence at the village or town of enumeration (Census of India 1971, 1975:12).

These questions along with other items of information obtained from the "individual slip"[6] made it possible for the Office of the Registrar General and Census Commissioner (ORGCC) to generate several tables on migration. All the migration tables were generated from data on place of last residence except the first table, which was based on place-of-birth data.

A person was counted as a migrant if he or she had had another place of normal residence irrespective of birthplace before coming to the place of enumeration. If a person born at the place of enumeration had moved subsequently to another village or town for work, study, or another purpose and had returned to the place of enumeration, that person was deemed to have had another place of residence prior to being enumerated at the present place. If a person had merely gone to another place or had been going from place to place on a tour or pilgrimage or for temporary business purposes, he or she was deemed not to have had another residence different from the place of normal residence. If, however, a person's normal residence was elsewhere at any time before the person was enumerated at his or her present place of residence, irrespective of where the person had been born, that person was regarded as a migrant (Census of India 1971, 1975:19).

To count each and every person in the country once and only once, the census defined the normal residence of a person in relation to the period of enumeration. A person was considered as normally residing at the place of enumeration if he or she normally stayed there and had actually resided there during any part of the enumeration period (i.e., from March 10 through March 31, 1971). A person who had been away throughout the enumeration period was not considered eligible for enumeration at that place but was enumerated wherever he or she was actually found during the enumeration period (Census of India 1971, 1975:16). Thus any persons who were away from their normal place of residence for whatever reasons during the period of enumeration and were not likely to return to that place between March 10 and March 31, 1971, were considered migrants at the place of enumeration.

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[4] For persons born outside the village or town of enumeration, the rural or urban status of the birthplace at the *time of birth* of the migrant was recorded (Census of India 1971, 1975:18).

[5] Rural or urban status of the place of last residence at the *time of migration* from the place was recorded (Census of India 1971, 1975:19).

[6] The census form used to collect information about each person is known as "individual slip." For the individual slip used in the 1971 census and the instructions to enumerators for completing it, see Census of India 1971 (1975: 12, 16–24).

Children born at their mothers' natal home become migrants when they return to their parents' home because their birthplace, which is also their last place of residence, is different from the place where they are enumerated. The effect of this movement is small, however, because it occurs among very young children. As the children grow older, their different birthplace seems to be forgotten and the birth is reported as having occurred at the place of enumeration.

The present study uses information obtained from three tables on migration from the 1971 census (the format of these tables is given in Appendix 1):

1. *Migrants to cities classified by sex, broad age group, educational level, and, in the case of workers, occupational division.* This table, based on place of last residence of the migrants, was prepared only for urban agglomerations and class I cities. It provides information on the occupations (categorized by division) pursued by migrants to the cities. Educational levels of the migrants indicate their levels of skill.

2. *Workers and nonworkers according to main activity, classified by place of last residence.* This table classifies migrants to class I cities in different migration streams by place of last residence–rural or urban, intradistrict, interdistrict but within the state of enumeration, interstate, and from countries outside India. Workers in each migration stream are further classified into nine industrial categories.

3. *Migrants classified by place of last residence, sex, age group, marital status, and duration of residence.*

This study also uses 1971 census tabulations on characteristics of the population of each city–its sex and age composition and that of the workers, number of literates and educated persons by sex, and industrial classification of workers–to compare the characteristics of migrants with those of the total population of each city or of its nonmigrants.

Although the census tables provide the occupational distribution of

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migrants, no such information was available for the total population of each city. To compare educational attainment and occupational placement of the migrant and nonmigrant workers, it was necessary to obtain information on educational attainment of all workers and their occupational distribution for at least some of the cities. That information was available in published form for each district by rural and urban residence. We therefore selected those districts where the population of the main city constituted at least 85 percent[7] of the total urban population of the district in which the city was located. We then assumed that the educational and occupational distribution of workers in the urban populations of the selected districts represented the educational and occupational distribution of the workers of the cities located in them. We could find 24 such cities in the country. There were certain inconsistencies, however, in the published data for four districts and cities, which had to be left out. Thus we used information on 20 cities–eight of them with populations of one million plus, six with populations between one-half million and one million, and the remaining six with 100,000–499,999 inhabitants (see Appendix 2)–to compare the educational attainment and occupational placement of migrants and nonmigrants.

Our analysis and the census data on which it is based have several other limitations besides those already mentioned.

The most important limitation of the analysis is that it deals only with inmigration to the cities and not with net migration. It would have been very useful to have information about outmigration also, but it is not possible to capture such information in a census since, theoretically, outmigrants from a particular city can go to any rural or urban settlement inside and even outside the country.

Another problem we faced is that some of the urban agglomerations comprise a number of cities and towns. For example, in 1971 the Calcutta agglomeration included 74 settlements spread over five districts of the state. Of those settlements ten besides Calcutta had populations of 100,000 and more. In treating an urban agglomeration as one unit, one loses separate information for such cities.

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[7] This cutoff point at 85 percent was purely arbitrary, but it provided a sufficient number of cities for which data on migrants could be compared with data on the district urban population. A smaller percentage would have allowed us to include several more cities in the analysis, but by definition that would have meant inclusion of a larger component of populations of other urban areas of the districts in the category of nonmigrants even though a fair proportion of those populations were of migrants.

Furthermore, at the time we processed our data, migration tables were not available for Shillong, a city with 122,752 inhabitants in 1971. This city has therefore been excluded from our analysis.

As is well known, Indian census data suffer substantially from inaccuracies in age reporting. These inaccuracies become more evident when data are used for smaller aggregations. But we believe these errors are similar for migrants and nonmigrants and hence would not affect the comparison. This limitation applies to other sets of comparative tables where such errors exist.

Finally, migration tables for each city were generated from a 20 percent sample selected systematically from the individual slips. Because of large sampling errors in the cell values of detailed cross-tabulations, many of those tabulations are not reliable. Accordingly, we have combined some of the categories and avoided analyses of migrant and nonmigrant characteristics based on detailed cross-tabulations.

Derived variables

From the data on migrants to each city and its total population, many variables were derived which can be classified into the following broad categories:

1. *Proportion of lifetime and current migrants in the city's population by sex.* Lifetime migrants are those who came to the city at some time during their lives and have been living there since then. They might have arrived in the city only a week earlier or been living there for decades. Lifetime migrants have also been called all-duration migrants because the duration of their stay at the place of enumeration is not specific. In contrast, current migrants are those who moved to the place of enumeration during the 365 days prior to the date of enumeration. The percentage of current migrants among lifetime migrants is taken as one variable, and the percentage of current migrants in the total population of the city is indicative of the current migration rate.

2. *Distribution of migrants to each city by migration stream according to the place of last residence.* The last residence is classified by its rural or urban character as well as by its administrative unit. If the place is within the same district in which the particular city is

situated, the migration is defined as intradistrict and is generally regarded as short-distance migration. If the last residence is located in another district but in the same state in which the particular city is located, the movement is defined as interdistrict migration and is considered to be medium-distance movement. Migration across state or union territory boundaries is defined as interstate migration and is assumed to be long-distance movement.

3. *Sex ratios of the total population, migrants, and nonmigrants.*
4. *Age composition of the total population, nonmigrants, and the migrants of each sex,* migrants being further classified by migration stream and duration (lifetime or current).
5. *Age and marital-status distribution of lifetime and current migrants by migration stream.*
6. *Proportion illiterate among migrants and nonmigrants; educational attainment of migrants in different migration streams, of total migrant and nonmigrant workers in 20 selected cities.* This distribution is also obtained for total migrants and migrant workers in age groups 15–29 and 30–59.
7. *Work participation rates of nonmigrants and migrants by sex and age—all ages, 15–29, and 30–59.*
8. *Ratio of migrant to nonmigrant workers.*
9. *Industrial classification of the total population, nonmigrants, and migrants, migrants being further classified by migration stream.*
10. *Occupational classification of migrant workers other than those working as cultivators or agricultural laborers, and also of nonmigrant workers* (in 20 cities).
11. *Distribution of migrant workers by place of origin and industrial category.*

CLASSIFICATION OF CITIES ACCORDING TO SELECTED CHARACTERISTICS

We have classified 148 cities of India into different groups according to their size, growth rate, functional specialization, age as a class I city, and regional location. Appendix 3 lists the cities by city size and shows their classification according to the other variables.

It is generally agreed that in India the metropolises are the major magnets for migrants, particularly long-distance migrants, and that those cities have been growing much faster than other cities. To determine differences in migration pattern and in the characteristics of migrants by city size, Indian cities have been classified into four categories on the basis of their 1971 populations: (1) 1,000,000+ (nine cities); (2) 500,000 to 999,999 (ten cities); (3) 200,000 to 499,999 (54 cities); and (4) 100,000 to 199,999 (74 cities). Map 1 shows the location of the cities and identifies them by size category.

An analysis of the growth rates of Indian cities during 1951–71, the two decades of development planning, indicates that some cities grew very fast while others did not experience growth commensurate even with their natural increase.[8] The latter group had net outmigration from their populations. The cities' growth rates are the net result of changes in population over time through natural increase, changes in municipal area, and the difference between in- and outmigration. The growth rates have been classified into three categories: (1) high growth rate, defined as a rate higher than that of the nation's urban population during 1951–71 (68 cities); (2) medium growth rate, defined as one between that of the urban population and that of the total population during 1951–71 (51 cities); and (3) low growth rate, defined as one below the national growth rate during 1951–71 (26 cities).

Although the cities generally perform diversified functions, it is still possible to determine their functional specialization. As indicated by several writers, the pattern of migration to the cities and the characteristics of the migrants are likely to differ according to the main functions of the cities. Several methods have been developed to determine functional specialization of the settlements (Harris, 1943; Pownall, 1953; Duncan and Reiss, 1956; Lal, 1957; Ahmad, 1965; Mitra, 1967a). Different methods yield similar results when the classification is sufficiently broad. As the purpose of the present study is to understand migration differentials related to the functional specialization of the cities at a broad level, we have borrowed Mitra's functional classification of the cities, created on the basis of 1971 census data,[9]

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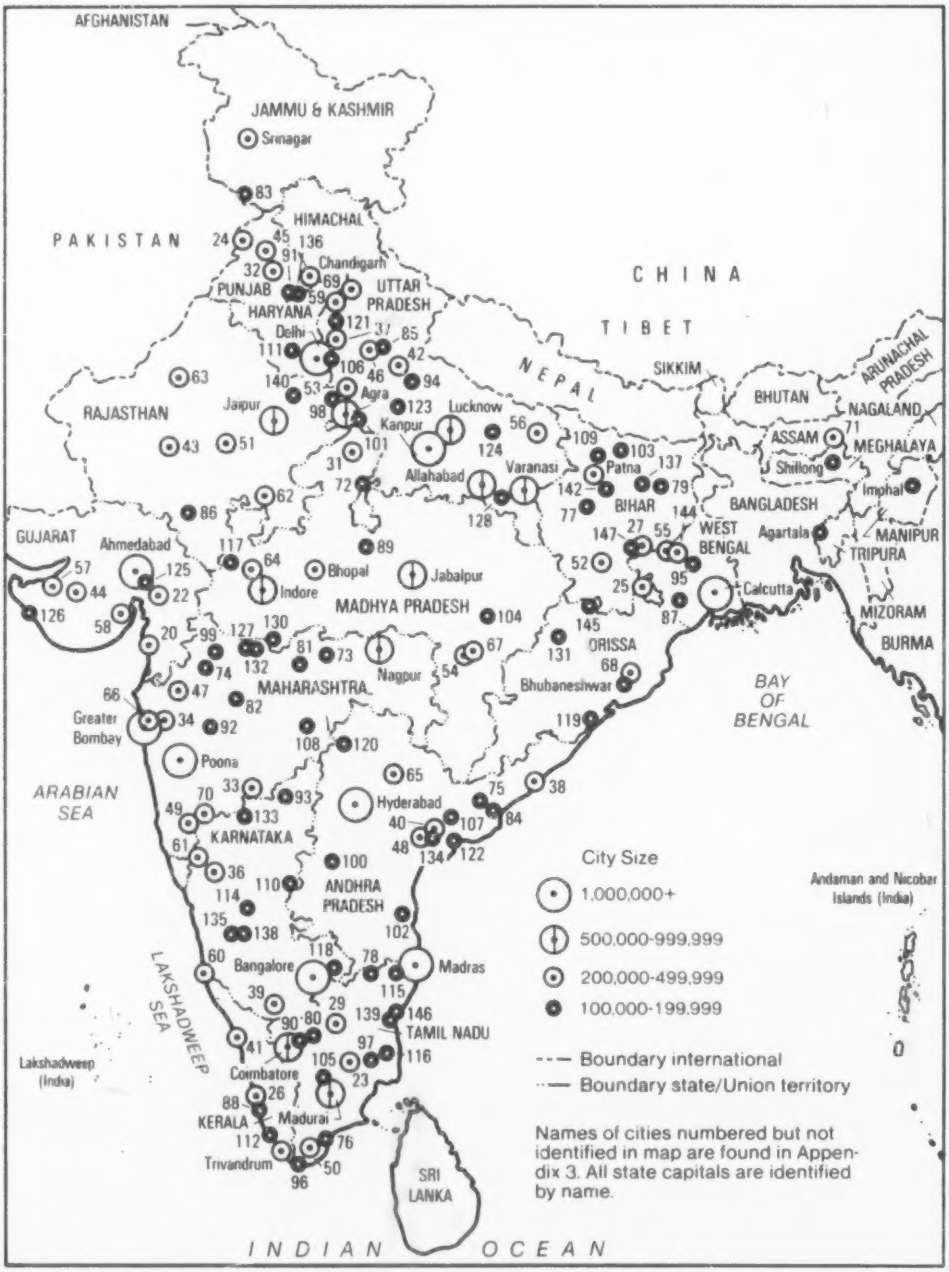
8. In the absence of reliable statistics on birth and death rates of each city, we have assumed that the national exponential growth rate represented the natural growth rate of each city. All those cities whose census growth rate for 1951–71 was lower than the national growth rate for the same period were, therefore, assumed to have growth rate not commensurate to the natural increase rate.

9. Mitra's functional classification of the 1971 cities, applying his methodology that earlier (1967a) he had developed for the classification of the 1961 cities, has not been published. We are grateful to Professor Mitra for making his unpublished data available to us.


AFGHANISTAN
JAMMU & KASHMIR
Srinagar
PAKISTAN
HIMACHAL
Chandigarh
PUNJAB
HARYANA
UTTAR PRADESH
Delhi
Agra
Jaipur
Kanpur
Lucknow
Allahabad
Varanasi
RAJASTHAN
CHINA
TIBET
NEPAL
SIKKIM
BHUTAN
ARUNACHAL PRADESH
NAGALAND
ASSAM
MEGHALAYA
Shillong
Imphal
Patna
BIHAR
BANGLADESH
WEST BENGAL
Agartala
MANIPUR
TRIPURA
MIZORAM
BURMA
Calcutta
GUJARAT
Ahmedabad
Bhopal
Jabalpur
Indore
MADHYA PRADESH
ORISSA
Bhubaneshwar
Nagpur
MAHARASHTRA
Greater Bombay
Poona
BAY OF BENGAL
ARABIAN SEA
Hyderabad
KARNATAKA
ANDHRA PRADESH
Bangalore
Madras
TAMIL NADU
LAKSHADWEEP SEA
Lakshadweep (India)
Coimbatore
KERALA
Madurai
Trivandrum
SRI LANKA
Andaman and Nicobar Islands (India)
INDIAN OCEAN
City Size
1,000,000+
500,000-999,999
200,000-499,999
100,000-199,999
Boundary international
Boundary state/Union territory

Names of cities numbered but not identified in map are found in Appendix 3. All state capitals are identified by name.

SOURCE: Derived from Survey of India map prepared in Map Division Office of the Registrar General, India.

MAP 1. Locations of cities with populations of 100,000 or more: India, 1971 and grouped the cities into three main functional categories: (1) manufacturing (68 cities); (2) trade, commerce, and transport (58 cities); and (3) service-administration and others (21 cities).

Some Indian cities have existed for a long time as important centers of economic, commercial, or administrative activities, whereas others graduated to the class I category much later. Some came into existence only after Independence and have grown very fast, mostly through net migration, to fulfill the functions for which they were established. Cities that have been in existence for a long time are now growing largely through natural increase, but the new cities are growing mainly through net inmigration. We have therefore classified the cities into the following categories according to the length of their existence: (1) those having a population of 100,000+ prior to 1901 (25 cities), (2) cities in existence prior to 1901 but graduated to class I between 1901 and 1941 (24 cities), (3) cities in existence prior to 1901 but graduated to class I status after the 1941 census (87 cities), and (4) new cities that came into existence after 1901 and attained class I status anytime between that date and 1971 (10 cities).

Finally, India displays regional diversity in its economic and sociocultural characteristics, which has influenced the migration pattern to the cities and been partly influenced by that pattern. So as to understand the effect of a city's location on its growth and inmigration, we have classified the cities into the following regions: (1) northern and northeastern Himalayan mountain ranges, including the Assam plains (six cities); (2) Punjab and upper Ganga plains, including the Rajasthan desert region (24 cities); (3) middle and lower Ganga plains (21 cities); (4) central India plateau north of the Satpura range (27 cities); (5) Deccan plateau (35 cities); and (6) coastal plains of the Eastern and Western Ghats (34 cities).

Data on all five classification variables were not available for six cities—Chandigarh, Durgapur, Rourkela, Pondicherry, Bokaro, and Imphal. For instance, Chandigarh, Durgapur, Rourkela, and Bokaro came into existence only after 1951; hence, their annual growth rates over the 20-year period could not be worked out. We have accordingly classified Chandigarh, Durgapur, and Rourkela on the basis of their 1961–71 growth rates, but it was not possible to classify Bokaro even on that basis. The population of Imphal dropped from 99,716 in 1941 to 2,862 in 1951 because in 1951 the superintendent of census operations for that area treated a large part of the town as rural.[10] We therefore preferred not to compute the growth rate for Imphal.

Although Pondicherry has existed for more than 250 years, it was a French possession until 1954 (Census of India 1961, 1964:1); hence, the table entitled "Towns and urban agglomerations classified by population in 1971 with variation since 1901" from the 1971 census did not give its population prior to the 1961 census (Census of India 1971, 1975:277), and we were unable to classify it on the basis of its length of existence as a class I city. It has therefore been left out of that classification scheme.

A cross-classification of cities by two or more variables shows certain interrelationships. For example, an association is found between city size and growth rate ($\chi^2 = 15.6$ with 6 degrees of freedom, significant at the 2 percent level). This relationship was to be expected as it is the sustained high growth rates that have led to tremendous increases in the size of cities. Similarly, an association exists between cities' regional location and their functional specialization ($\chi^2 = 28.3$ with 10 d.f., significant at the 1 percent level). More manufacturing cities are located in the central India and Deccan plateaus than mere chance would suggest. Similarly, trade, commerce, and transport cities tend to be found in the Deccan plateau or in the coastal plains, whereas administrative and service cities are concentrated in the Himalayan region and the upper Ganga plains. An association also is found between regional types and growth rates, cities in the upper Ganga plains, central plateau, and Deccan plateau experiencing very high growth rates and those in the middle and lower Ganga plains having very low growth rates. The data show an association between regional location, growth rate, and functional specialization; the cities of the central and Deccan plateaus generally experienced high growth rates and specialized in manufacturing.

As expected, there is a high degree of association between age of the cities and their size. All the metropolitan cities and seven out of ten with populations of 500,000 to one million had populations of 100,000 and more even before the beginning of this century. In contrast, most of the cities with populations of 100,000 to 200,000 graduated to class I status only recently, between 1951 and 1971. We found no association, however, between cities' age and their functional specialization.

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[10] This happened because the superintendent decided that Imphal was a collection of villages grouped around the palace of the ruler and that a large percentage of its population was agricultural. Hence, only a small fraction of the area around the palace was treated as urban (Census of India 1951, 1954:148).

Given these interaction effects, it would have been useful to classify the cities into subcategories (see Table 1) for a better understanding of the migration process, but such classification causes the cell values to become very small in many cases and the analysis statistically unreliable. Instead, we have used multiple classification to analyze the simultaneous effect of the five variables on the volume of migration.

The averages for the city categories are unweighted. This helped us in obtaining mean and standard deviations for each variable and in testing levels of significance where that was necessary.

PATTERNS OF MIGRATION TO INDIAN CITIES

Volume of migration

In 1971 lifetime migrants to class I cities constituted about two-fifths of the average city population, but the proportion of female migrants among the cities' female populations was somewhat larger than that of male migrants among their male populations (Figure 2 and Table 2).[11] Medium-sized cities (200,000–499,999 inhabitants) had the largest share of migrants, but it did not differ significantly from that of the metropolises or the smaller cities. The proportion of migrants was significantly lower in cities with 500,000–999,999 inhabitants than in other cities, although half of them had fast growth rates and the other half had medium growth rates during 1951–71. Among the five cities with high growth rates in this size class, four–Coimbatore, Madurai, Jaipur, and Jabalpur–experienced substantial growth of peripheral areas between the 1961 and 1971 censuses.

Cities with high growth rates had a higher proportion of inmigrants in their populations than other cities (Figure 2). Service cities attracted more inmigrants; in contrast, Bulsara (1964:36) said that industrial

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[11] The distribution of migrants in Table 2 and all subsequent tables is by place of last residence and not by place of birth. Thus, people born outside India who changed their Indian residence before the 1971 census were counted as migrants within the country. In contrast, people born in India who had been abroad as emigrants were enumerated as having last resided outside India. Hence, Table 2 may not reflect the exact proportions of immigrants–persons of foreign origin–to the total populations of Indian cities.

TABLE 1. Cross-classification of 145 cities by growth rate, city size, and functional specialization: India, 1971

City size and functional specialization	Growth rate			
	High	Medium	Low	Total
1,000,000+				
Manufacturing	4	1	0	5
Trade and transport	1	2	0	3
Service	1	0	0	1
Total	6	3	0	9
500,000–999,999				
Manufacturing	3	3	0	6
Trade and transport	1	0	0	1
Service	1	2	0	3
Total	5	5	0	10
200,000–499,999				
Manufacturing	15	11	1	27
Trade and transport	11	6	3	20
Service	3	3	1	7
Total	29	20	5	54
100,000–199,999				
Manufacturing	12	5	11	28
Trade and transport	11	15	8	34
Service	5	3	2	10
Total	28	23	21	72
All sizes				
Manufacturing	34	20	12	66
Trade and transport	24	23	11	58
Service	10	8	3	21
Total	68	51	26	145

cities attracted a larger proportion of inmigrants than nonindustrial cities. Further, comparatively new cities had much higher proportions of inmigrants in their populations than other cities. The proportion of inmigrants in the populations of the cities of the middle and lower Ganga plains, however, averaged just 30.2 percent, which was significantly lower than the averages for the other regions (Table 2).

Female inmigrants to the cities formed a larger proportion than males in all categories except in metropolitan cities, new cities, and cities of the Himalayan region (Figure 2). The problem of adequate living space in the metropolises probably acts as a deterrent to family

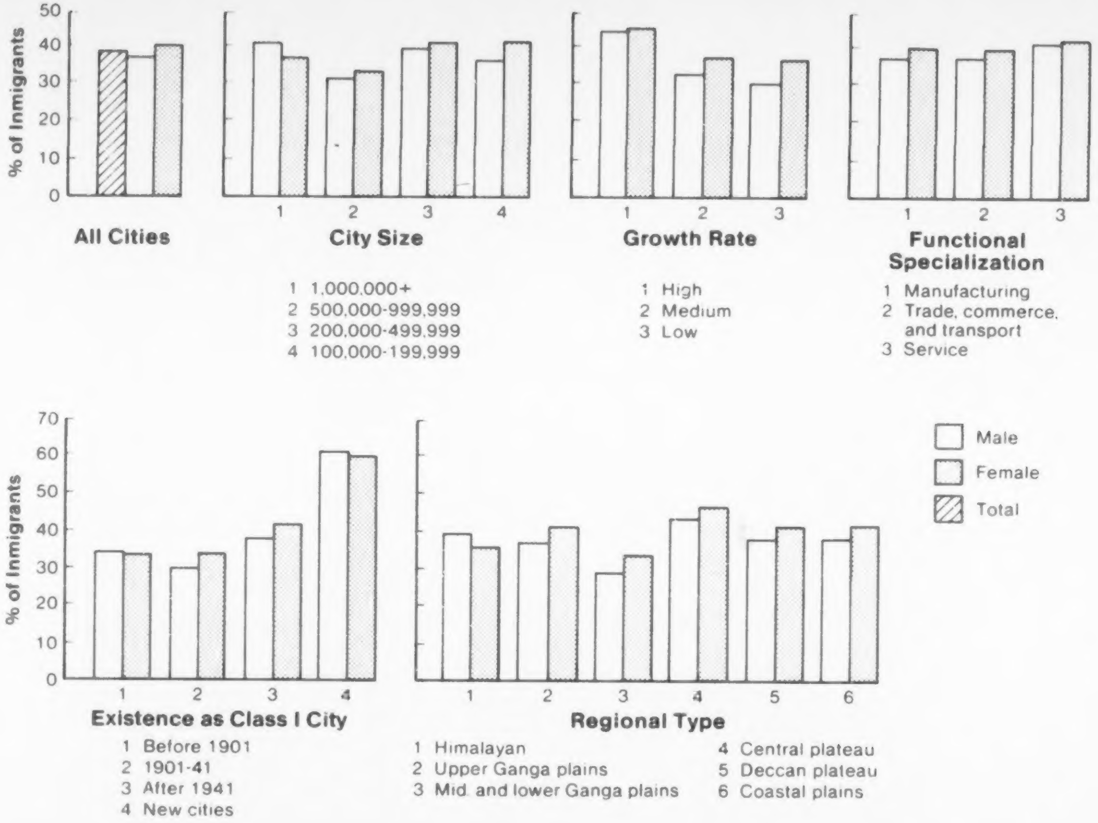

FIGURE 2. Percentages of inmigrants by city characteristics: India, 1971

TABLE 2. Percentages of total, male, and female lifetime migrants in city populations by city characteristic: India, 1971

City characteristics	Cities (N)	% of lifetime inmigrants		
		Both sexes	Males	Females
All cities	147	38.4	36.9	40.0
City size				
1,000,000+	9	39.0	40.6	36.8
500,000–999,999	10	32.1	31.3	33.1
200,000–499,999	54	39.8	39.1	40.6
100,000–199,999	74	38.2	35.7	40.9
Growth rate				
High	68	43.9	43.4	44.4
Medium	51	34.1	32.1	36.4
Low	26	32.6	29.5	36.0
Functional specialization				
Manufacturing	68	38.2	36.4	40.1
Trade and transport	58	37.7	36.2	39.3
Service	21	41.2	40.6	41.8
Length of existence as class I city				
Before 1901	25	33.3	33.4	33.1
1901–41	24	31.5	29.8	33.5
After 1941	87	39.3	37.3	41.6
New cities[a]	10	60.6	61.1	59.9
Regional type				
Himalayan	6	36.9	38.3	35.0
Upper Ganga plains	24	38.0	36.0	40.4
Middle and lower Ganga plains	21	30.3	28.4	32.6
Central plateau	27	44.3	43.0	45.8
Deccan plateau	35	38.9	37.6	40.3
Coastal plains	34	38.8	37.3	40.4

[a] New cities are defined as those cities that came into existence after 1901 and attained class I status any time between 1901 and 1971.

migration, keeping the proportion of females low there. In the new cities initial job opportunities were primarily for males, and that made their proportions higher in these cities.

Distribution of migrants in migration streams

An important factor in the study of cityward migration is knowledge about the inmigrants' places of origin. Among the lifetime migrants to

TABLE 3. Percentage distributions of migrants to cities in different migration streams by city characteristic: India, 1971

City characteristics	Cities (N)	Intradistrict		Interdistrict		Interstate		Resided in India		Immi-grants	Total
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban		
All cities											
Both sexes	147	26.67	7.47	17.84	20.41	8.93	12.82	53.45	40.70	5.85	99.99
Males	147	25.59	7.00	18.59	19.99	9.85	12.89	54.03	39.88	6.09	100.00
Females	147	27.80	7.96	17.07	20.93	7.84	12.75	52.70	41.63	5.66	100.01
City size											
1,000,000+	9	6.36	5.08	25.41	17.75	17.15	19.96	48.92	42.79	8.22	99.93
500,000–999,999	10	19.65	5.51	21.04	23.67	9.42	15.38	50.11	44.56	5.32	99.99
200,000–499,999	54	23.41	6.74	17.44	21.28	10.01	14.02	50.85	42.04	7.11	100.01
100,000–199,999	74	32.48	8.56	16.78	19.64	7.08	10.73	56.34	38.93	4.72	99.99
Growth rate											
High	68	23.63	6.67	19.04	19.85	10.76	14.48	53.43	41.00	5.56	99.99
Medium	51	30.64	8.27	16.33	20.96	6.39	11.02	53.36	40.25	6.39	100.00
Low	26	26.75	7.98	17.17	2[illegible].88	8.80	11.85	52.72	41.71	5.58	100.01
Functional specialization											
Manufacturing	68	25.96	6.87	19.46	20.34	10.41	12.69	55.83	39.90	4.26	99.99
Trade and transport	58	30.07	9.09	16.87	20.55	6.88	10.79	53.82	40.42	5.76	100.01
Service	21	19.62	4.94	15.29	20.23	9.80	18.86	44.71	44.03	11.26	100.00

Length of existence as class I city										
Before 1901	25	14.71	5.04	23.07	21.81	11.50	16.10	49.28	42.95	7.75	99.98
1901–41	24	25.34	7.89	15.79	22.22	8.49	13.38	49.62	43.49	6.88	99.99
After 1941	87	32.26	8.47	16.50	20.45	6.71	10.39	55.47	39.30	5.22	100.00
New cities[a]	10	12.06	4.53	23.08	13.91	20.64	21.57	55.78	40.01	4.20	99.99
Regional type											
Himalayan	6	19.92	5.14	12.34	16.81	8.57	14.76	40.83	36.71	22.45	99.99
Upper Ganga plains	24	18.53	6.07	13.90	20.46	8.75	18.15	41.18	44.68	14.15	100.01
Middle and lower Ganga plains	21	26.54	6.80	22.44	20.10	7.63	8.82	56.61	35.72	7.67	100.00
Central India plateau	27	18.98	5.09	18.95	20.26	14.49	17.67	52.42	43.02	4.54	99.98
Deccan plateau	35	32.02	9.77	16.22	21.74	8.22	11.18	56.46	42.69	0.85	100.00
Coastal plains	34	34.30	8.80	19.54	19.93	6.26	9.03	60.10	37.76	2.13	99.99

a. New cities are defined as those cities that came into existence after 1901 and attained class I status any time between 1901 and 1971.

the 147 cities, 53.5 percent came from rural areas, 40.7 percent from urban areas, and the remaining 5.8 percent from other countries (Table 3). In relation to the populations of sending areas the proportion of urban migrants to cities was much higher than rural migrants. Migration among the class I cities themselves seems to account for a substantial share of urban-to-urban migration but its volume could not be estimated in the absence of data on city-by-city flows.

The intradistrict migration stream constituted 33.9 percent of the lifetime migrants, while interdistrict and interstate streams accounted for 38.3 percent and 21.9 percent, respectively.

The proportion of intradistrict migration was lowest in the metropolitan cities (Figure 3) because Bombay, Calcutta, and Madras form districts in themselves and thus did not have intradistrict migrants, and because these cities are of national and international economic, administrative, and political importance, attracting migrants from all over India.

Intradistrict migration was more than 50 percent of total migration in 31 cities; of those, 11 cities are situated in Tamil Nadu, seven in Andhra Pradesh, five in Bihar, three in Karnataka, and one each in Kerala, Gujarat, Maharashtra, Manipur, and Orissa. Heavy intradistrict migration to the cities of Andhra Pradesh and Tamil Nadu may be due to the large size of the districts in which the cities are located; the average population in 1971 was 3.12 million and the average number of towns other than those under consideration was 27.[12] Many of those cities have been of local importance only, serving their immediate hinterlands through trade, commerce, and transport. The Bihar cities with large proportions of intradistrict migrants–Gaya, Darbhanga, Muzaffarpur, Monghyr, and Bihar–had very low proportions of inmigrants in their populations. Those cities are mainly of local importance in the state's economy.

Interstate migration was high in metropolitan cities, in cities with high growth rates, in comparatively new cities, and in cities located in the central India plateau (Figure 4). A certain amount of interaction occurred among these variables since a number of new cities in the central India plateau had very high growth rates during 1951–71.

The proportion of interstate migrants, particularly from urban

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[12] The average population of other districts with at least one class I city was 2.05 million; an average district had 11 noncity urban settlements.

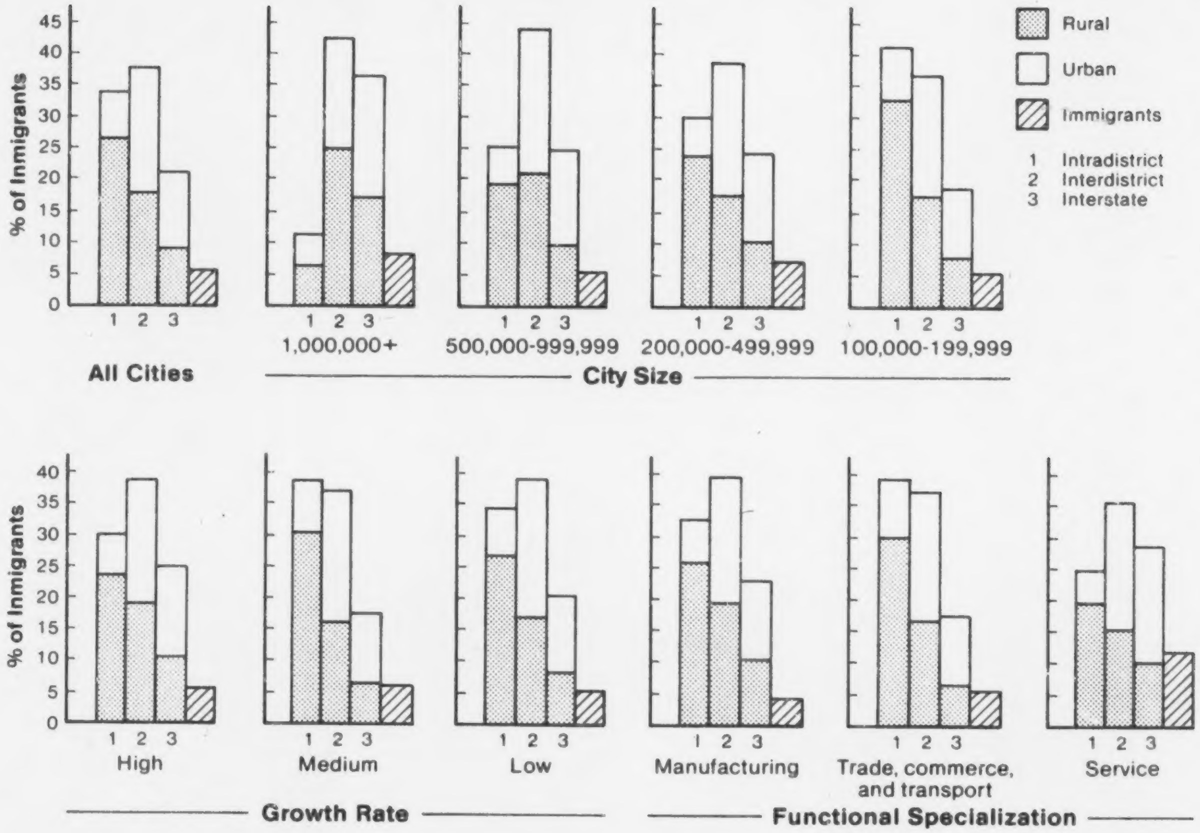

FIGURE 3. Distribution of inmigrants in different migration streams by city size, growth rate, and functional specialization: India, 1971

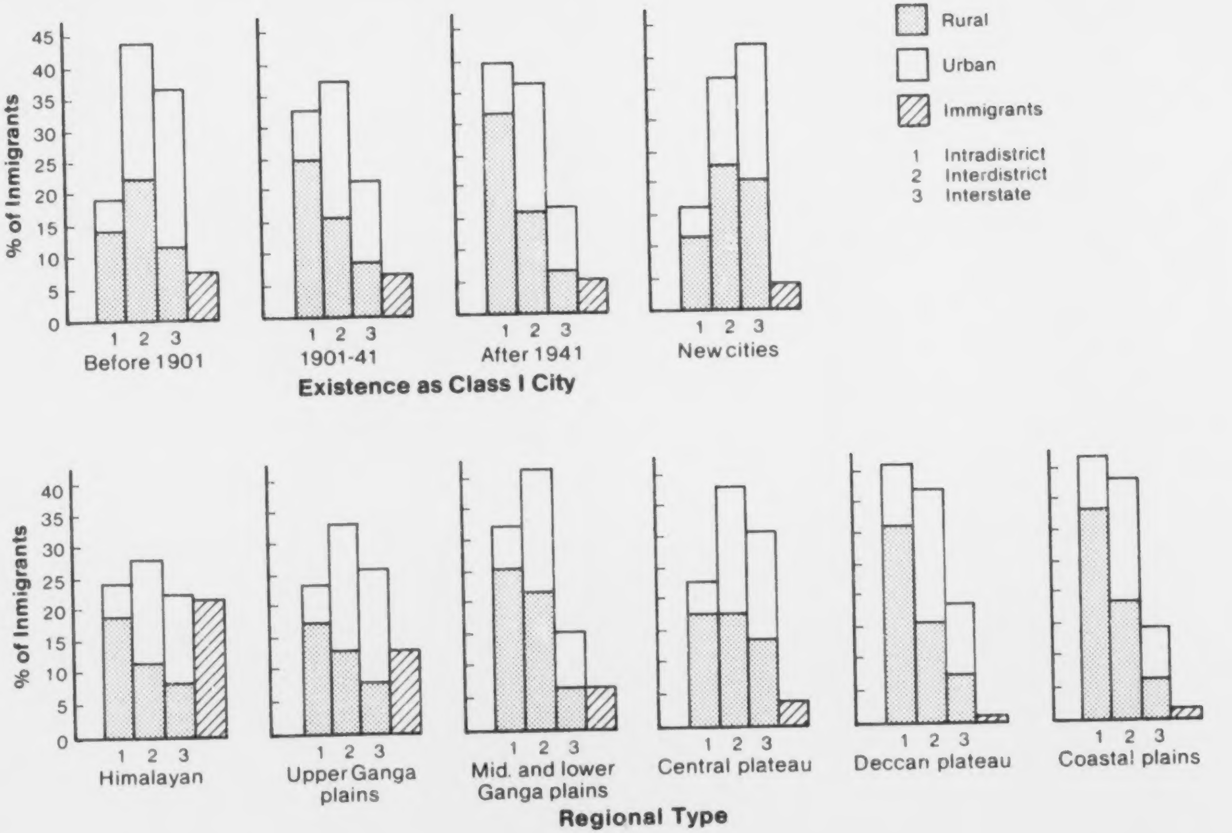

FIGURE 4. Distribution of inmigrants in different migration streams by city's existence as a class I city and regional type: India, 1971

areas, was highest in service cities and lowest in trade, commerce, and transport cities, pointing to the stronger pull of service cities on urban long-distance migrants. In addition, administrative and service city employers generally require people with higher education levels who generally come from urban areas and may be willing to move long distances if a secure job is available, especially if the job leads to a higher social status.

The proportion of immigrants was highest in cities of the Himalayan region, followed by Punjab and the upper Ganga plains. The proportion was 72.2 percent in Agartala, the capital of Tripura, which is an area surrounded on three sides by Bangladesh. A certain amount of illegal immigration probably occurs from Bangladesh through Tripura and Agartala. Immigrants constituted 35 percent of the total migrants in Jullundur, 33.3 percent in Burdwan, 32.4 percent in Amritsar, 32.3 percent in Rohtak, and 32.2 percent in Calcutta. Most of these immigrants came from Pakistan and present Bangladesh in 1947 when the country was partitioned into India and Pakistan.

Inmigration rates

The inmigration rate to a city is defined by the following formula:

$$m_i = \frac{M_i}{P_i} k$$

where m_i = inmigration rate, M_i = total inmigrants to the city within one year before the census enumeration, P_i = population of the city as of the census date, and k = constant, which can be 100 or 1,000 (here $k = 100$).

The inmigration rate of 3.05 percent for males for all 147 cities (Table 4) is higher than that for females (2.49 percent); the difference is statistically significant. In fact, the inmigration rate for males is invariably higher than for females in all city categories, indicating greater male inmigration during 1970–71. This finding is opposite to the one relating to lifetime migration. Thus while on a short-term basis migration is male-dominated, it slightly favors females on a long-term basis.

The inmigration rates for cities in the two smaller size categories are significantly higher than in the two larger size categories; the inmigration rates fall as growth rates decline. However, the growth rates relate to a period of 20 years–from 1951 to 1971–whereas inmigration

TABLE 4. Inmigration rates to cities by city characteristic: India, 1971

City characteristics	Cities (N)	Rate per 100 persons		
		Both sexes	Males	Females
All cities	147	2.79	3.05	2.49
City size				
1,000,000+	9	2.16	2.37	1.92
500,000–999,999	10	2.01	2.36	1.74
200,000–499,999	54	3.01	3.33	2.63
100,000–199,999	74	2.90	3.13	2.62
Growth rate				
High	68	3.23	3.51	2.89
Medium	51	2.52	2.77	2.26
Low	26	2.40	2.65	2.09
Functional specialization				
Manufacturing	68	2.56	2.83	2.26
Trade and transport	58	2.72	2.95	2.47
Service	21	4.05	4.47	3.52
Length of existence as class I city				
Before 1901	25	2.14	2.44	1.85
1901–41	24	2.41	2.68	2.10
After 1941	87	3.02	3.29	2.70
New cities[a]	10	4.11	4.35	3.75
Regional type				
Himalayan	6	3.88	4.39	3.18
Upper Ganga plains	24	3.36	3.68	2.97
Middle and lower Ganga plains	21	1.06	1.21	0.95
Central India plateau	27	3.13	3.41	2.77
Deccan plateau	35	2.73	3.04	2.37
Coastal plains	34	3.27	3.48	3.02

a. New cities are defined as those cities that came into existence after 1901 and attained class I status any time between 1901 and 1971.

rates relate only to 1970–71; hence their influence on long-term growth rates or on any simultaneity effect is likely to be small. The inmigration rates for the trade, commerce, and transport cities are lower than for the service cities but are not necessarily the lowest rates. Further, the inmigration rates are higher in newer cities. The inmigration rates are significantly lower in cities of the middle and lower Ganga plains. These findings are similar to the findings relating to lifetime migrants.

High inmigration rates generally imply high growth rates of the cities' populations, but if the rates are higher than the average annual growth rates between two successive censuses, they imply substantial outmigration from such cities, since

$$r_a = r_n + (m_i - m_o)$$

or $$m_i - r_a = m_o - r_n,$$

where r_a = average annual growth rate between two successive censuses, r_n = natural increase rate, that is, birth rate − death rate, m_i = inmigration rate, and m_o = outmigration rate. In several cities (Meerut, Dehradun, Jammu, Ahmadnagar, Machilipatnam, Ambala Cantonment, and Kolar Gold Fields) $(m_i - r_a)$ was more than 2 percentage points. The reasons are likely to be specific to individual cities and can be analyzed by considering local conditions in each case. In 12 other cities $(m_i - r_a)$ was between 1 and 2 percentage points, pointing to substantial outmigration from such cities.

In contrast, several cities during 1970–71 had low inmigration rates, (m_i) even less than 1 percent; these cities were Calcutta, Varanasi, Srinagar, Asansol, Bhagalpur, Rampur, Kharagpur, Shahjahanpur, and Burdwan. In several other cities $m_i - r_a$ was negative and more than 2 percentage points.

Several factors may help explain this phenomenon. For example, in cities like Calcutta, Bombay, and Madras little outmigration occurs and growth is mainly due to natural increase, inmigration, and, in some cases, extension of municipal boundaries. In other cities, the inmigration rate and the census growth rate are both very low. The economic base of these cities seems to be weak and the residents probably travel to other areas to work. Several of these cities (Varanasi, Patna, Bhagalpur, Shahjahanpur, Burdwan, Firozabad, Faizabad, Mirzapur, Monghyr, and Bihar) are located in the middle and lower Ganga plains.

Current migrants constituted 7.3 percent of the total inmigrants to the cities, the proportion being higher among males than females (Table 5). Large city-to-city variations occurred in this proportion, from a low of only 0.84 percent in Shahjahanpur (the middle and lower Ganga plains region) to a high of 19.5 percent in Jammu (the Himalayan region). For instance, the high proportion of current

TABLE 5. Percentages of current migrants among all migrants by place of last residence and city characteristic: India, 1971

City characteristics	Cities (N)	Total mi-grants	Resided in India			Intradistrict			Interdistrict and interstate		
			Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
All cities											
Both sexes	147	7.3	7.6	7.2	8.3	6.7	6.1	8.3	8.6	9.0	8.4
Males	147	8.4	8.8	8.4	9.6	7.8	7.3	9.6	9.7	10.0	9.6
Females	147	6.2	6.4	6.0	7.2	5.6	5.0	7.2	7.4	7.7	7.3
City size											
1,000,000+	9	5.5	5.7	5.4	6.0	6.0	4.9	8.1	6.1	6.2	6.1
500,000–999,999	10	6.3	6.6	6.1	7.1	4.6	4.2	5.5	7.3	7.7	7.2
200,000–499,999	54	7.8	8.2	7.9	8.8	6.9	6.5	8.2	9.2	9.7	9.0
100,000–199,999	74	7.3	7.6	7.1	8.4	6.8	6.1	8.7	8.6	9.0	8.4
Growth rate											
High	68	7.3	7.6	7.1	8.4	7.0	6.4	8.7	8.4	8.5	8.4
Medium	51	7.6	8.0	7.6	8.8	6.3	5.9	7.7	9.5	10.1	9.3
Low	26	6.6	7.0	6.9	7.5	6.4	5.5	8.4	7.4	8.0	7.1
Functional specialization											
Manufacturing	68	6.7	6.9	6.5	7.6	6.0	5.4	7.6	7.9	8.4	7.6
Trade and transport	58	7.1	7.4	6.9	8.2	7.0	6.2	9.1	8.2	8.4	8.3
Service	21	9.7	10.7	10.5	11.1	7.9	7.7	8.4	11.9	12.7	11.6

Length of existence as class I city											
Before 1901	25	6.7	7.1	6.9	7.4	5.7	5.2	7.2	8.0	8.7	7.6
1901–41	24	7.8	8.3	7.8	9.1	7.4	6.4	9.4	8.9	9.2	9.0
After 1941	87	7.4	7.8	7.3	8.6	6.6	6.1	8.1	9.0	9.4	8.8
New cities	10	6.3	6.4	6.5	6.6	7.1	6.4	9.0	6.2	6.3	6.3
Regional type											
Himalayan	6	10.7	12.6	11.9	12.6	9.2	9.5	8.6	14.3	14.9	13.5
Upper Ganga plains	24	8.8	9.9	10.4	9.7	7.6	7.3	8.3	10.9	12.7	9.9
Middle and lower Ganga plains	21	3.6	3.8	3.5	4.3	2.9	2.9	3.2	4.3	4.1	4.7
Central India plateau	27	7.0	7.2	6.9	7.7	6.1	5.8	7.3	7.8	8.0	7.8
Deccan plateau	35	7.1	7.1	6.3	8.2	7.1	5.4	11.0	7.8	8.7	7.4
Coastal plains	34	8.4	8.4	7.7	9.8	7.9	7.5	9.5	10.2	9.6	10.6

migrants in Meerut (16.4 percent) in the upper Ganga plains region was probably caused by counting as migrants those persons who had come to an annual fair that attracts thousands from different parts of the country for up to four weeks. By coincidence, this fair was held when the 1971 census enumeration was taking place.

The proportion of current migrants among total inmigrants from other urban areas of the same district was significantly higher than those from the district's rural areas. This finding implies higher urban-to-urban intradistrict migration during 1970–71, possibly the result of several precensus incidents relating to the rural and urban Indian economy. In contrast, the proportion of current migrants from rural areas in the combined interdistrict and interstate migration stream was higher than the proportion from urban areas, although the difference was not statistically significant (Figure 5).

The proportion of current migrants in cities of more than a million inhabitants was somewhat lower than in cities in other size categories, although no significant difference existed among them. The proportion of current migrants was higher in cities with medium growth rates and significantly higher in service cities and in cities of the Himalayan region, Punjab, and the upper Ganga plains (Figures 5 and 6). In contrast, the proportion of current migrants in cities of the middle and lower Ganga plains was significantly lower (3.6 percent) compared with cities in other regions.

Whereas the newer cities had the highest proportion of lifetime migrants (Figure 6), the proportion of current migrants in these cities was the lowest (Table 5), possibly because one development phase had ended and unless the cities attracted new investments, their power to attract migrants was limited.

The analysis of migration patterns to Indian cities indicates that the city size may not be an important determinant of future migrant flows. Between 1971 and 1981, Nagpur, Lucknow, and Jaipur moved into the category of cities with more than a million inhabitants. As more cities graduate into the million-plus category and others attain class I status, they are likely to have greater proportions of inmigrants in their populations. The proportion of inmigrants in the population of existing cities, particularly the old ones, is likely to diminish soon as a major part of the cities' growth will result from natural increase and municipal boundary expansion.

As observed earlier, newer cities of the central India plateau had

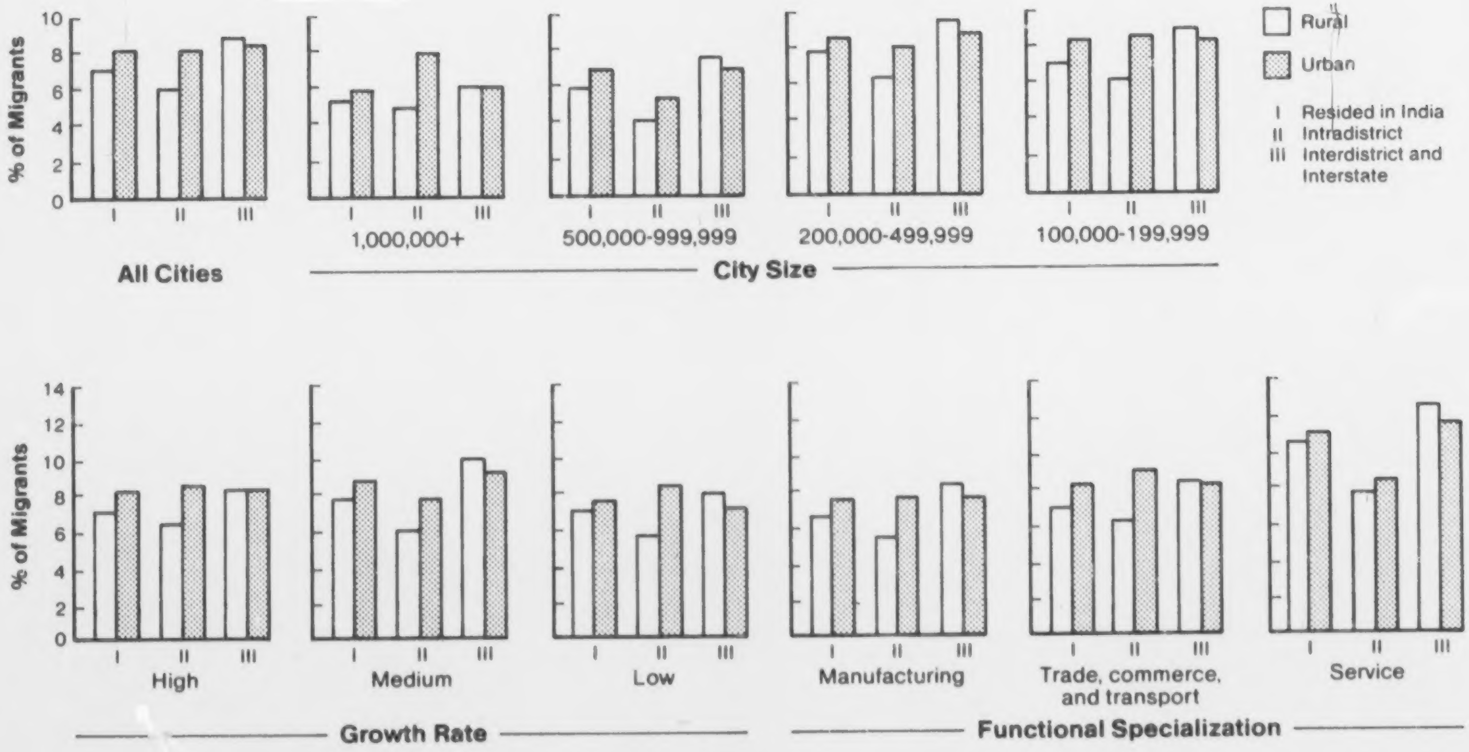

FIGURE 5. Percentages of current migrants among all migrants by last residence and by city size, growth rate, and functional specialization: India, 1971

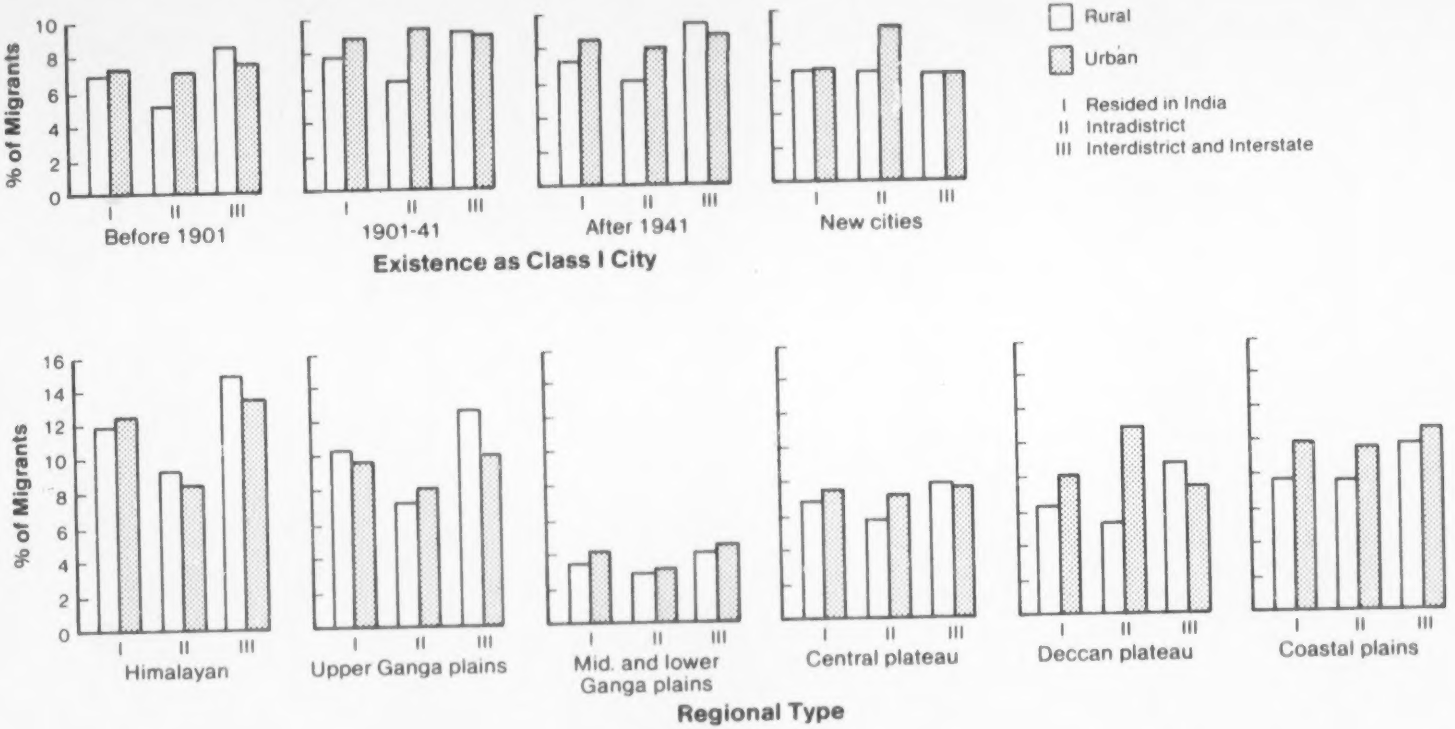

FIGURE 6. Percentages of current migrants among all migrants by last residence and by city's existence as a class I city and regional type: India, 1971

very fast growth rates during 1951–71. In contrast, older cities of the middle and lower Ganga plains experienced very slow growth and low migration rates. Since the cities in the latter category already possess infrastructural facilities, developmental efforts should be made by the state and central governments so that existing facilities are utilized at an optimum level and the cities develop at a fast pace.

As for migrant origins, urban-to-urban migration streams will play a more important role in the future of administrative and service cities since the job opportunities there require people with higher education levels. The country's pattern of industrialization–that is, the extent of industry distribution–also will determine future migration flows to Indian cities.

MIGRANT AND NONMIGRANT CHARACTERISTICS

Our analysis of some important inmigrant characteristics included factors such as sex and age composition, marital status distribution, literacy level, educational attainment, and employment patterns. These factors were compared with the same factors in the nonmigrant population to the extent that data are available for comparison.

Sex composition

It is generally believed that migration in India, particularly to the cities and metropolises, is male selective and causes an imbalance in the sex ratio of the urban areas (Zachariah, 1968:115; Simmons et al., 1977:54–55). The 1971 census data for the 147 cities, however, show that the sex ratio among the lifetime migrants was lower than that of the total population and even lower still when compared with the nonmigrants (Table 6). Two factors seem to explain the observed pattern: (1) the sex ratio of nonmigrants increases with age up to about age 40, indicating marriage migration of females from the cities, and (2) in contrast, the sex ratio of migrants aged 20 and above is lower for the same reason and because of associational migration of females.

The sex ratio of current migrants (145) was significantly higher than that of lifetime migrants (107) or the total population (115), indicating that in the initial stages migration to cities is male selective (Table 6). On the basis of 1961 census data Mitra observed that the sex ratio, although above 100, became somewhat favorable to females with longer residence durations (Mitra, 1967a:608). The pattern seems to be established further on the basis of 1971 census data; its cause

TABLE 6. Sex ratios among the total population, lifetime migrants, current migrants, and nonmigrants by city characteristic: India, 1971

City characteristics	Cities (N)	Total population	Lifetime migrants	Current migrants	Nonmigrants
All cities	147	115	107	145	121
City size					
1,000,000+	9	123	138	151	116
500,000–999,999	10	117	111	160	120
200,000–499,999	54	117	113	150	119
100,000–199,999	74	113	98	139	123
Growth rate					
High	68	117	114	142	118
Medium	51	115	103	145	123
Low	26	113	93	149	124
Functional specialization					
Manufacturing	68	115	105	146	122
Trade and transport	58	114	106	140	120
Service	21	120	116	157	121
Length of existence as class I city					
Before 1901	25	120	122	160	119
1901–41	24	112	100	148	119
After 1941	87	113	102	140	121
New cities	10	131	134	150	126
Regional type					
Himalayan	6	120	135	180	111
Upper Ganga plains	24	119	107	149	128
Middle and lower Ganga plains	21	124	109	166	132
Central India plateau	27	119	111	150	124
Deccan plateau	35	111	104	141	116
Coastal plains	34	108	100	124	113

seems to be the higher mobility of males since male migrants, in an effort to secure better job opportunities, might move alone from one city to another. In contrast, since a large part of female migration results from marriage, it is of a more stable nature. More data, however, are needed to confirm this proposition.

Analysis of total and migrant populations by city characteristics shows that sex ratios were higher for the lifetime migrants to the metropolises (Table 6). They were also higher in the new cities or those situated in the Himalayan region. The reasons for this higher male selectivity in migrant populations of cities belonging to these categories are mostly economic. The pull of the million-plus cities on both rural and urban migrants for jobs continues to attract more males. The new cities also provided male-dominated jobs and contributed to male predominance among the migrants. The cities in the Himalayan region had high sex ratios possibly because males are attracted from outer areas for heavy jobs and three of the six cities in this category have military cantonments.

The sex ratio of the lifetime migrants to the cities in the smallest size category (population of 100,000–199,999) was less than 100 (Table 6). It was also less than 100 in cities with low growth rates and cities of the coastal plains. Thus, in absolute number, more females than males migrated to those cities.

An analysis of the sex ratios of the total population, nonmigrants, and current and lifetime migrants (with migrants further classified by their place of last residence according to broad age groups) provides a clearer picture of subpopulation differentials. The sex ratio among nonmigrants increased sharply up to the age group 20–24, by which age most women are married and have left their natal home and, in many cases, the city of their birth also (Table 7, Figure 7). In contrast, the sex ratio among lifetime migrants falls sharply between the age groups 15–19 and 20–24 and dips below 90 among migrants from urban areas for the same reason that it rose among nonmigrants. The lower sex ratio for urban inmigrants than for rural ones indicates a greater amount of migration through marriage between the cities and from other urban areas, and it also indicates more family migration. The high sex ratio among rural migrants until about the age of 50 is a clear indication of male selectiveness in the rural-to-city migration stream.

The sharp rise in the sex ratio of current migrants up to ages 25–49 indicates male-dominated inmigration during 1970–71. It is likely that the urban economy was trying to recover from the small recession of the late 1960s and therefore attracted large male migration in the active age group.

Females dominated intradistrict lifetime migration but males dominated interdistrict and interstate migration in almost all age groups (Table 7), indicating that the marriage field for females has been

TABLE 7. Sex ratios by age among the total population and among nonmigrants, lifetime migrants, and current migrants to cities by place of last residence: India, 1971

Type of population and migrants' place of last residence	Age group					
	All ages	0–14	15–19	20–24	25–49	50+
Total population	115	107	119	122	124	118
Nonmigrants	121	106	127	157	163	158
Lifetime migrants						
Total	107	113	112	100	108	102
Last residence in India						
Rural	111	118	127	110	112	100
Urban	102	109	96	89	105	106
Last residence in district of enumeration						
Rural	96	116	114	92	93	88
Urban	95	122	87	86	95	101
Current migrants						
Total	145	113	128	164	218	125
Last residence in India						
Rural	162	125	157	194	219	130
Urban	140	108	104	144	207	129
Last residence in district of enumeration						
Rural	156	118	154	190	233	136
Urban	142	124	88	141	214	150

restricted largely to the intradistrict population whereas medium- and long-distance migration have been generally governed by economic considerations.

Age distribution

Figure 8 shows age pyramids for India's total population, of all the 147 cities' populations, nonmigrants, and migrants, migrants being further classified by rural or urban origin on the basis of their last residence. The age distribution of the total population of the cities seems to conform largely to the age distribution of the country's total population (Figure 8A). In the population of the cities the proportion of males below age 15 was somewhat lower than that of females, but the number of males was proportionately higher in the age group 25–49. Among nonmigrants, children below age 15 constituted more

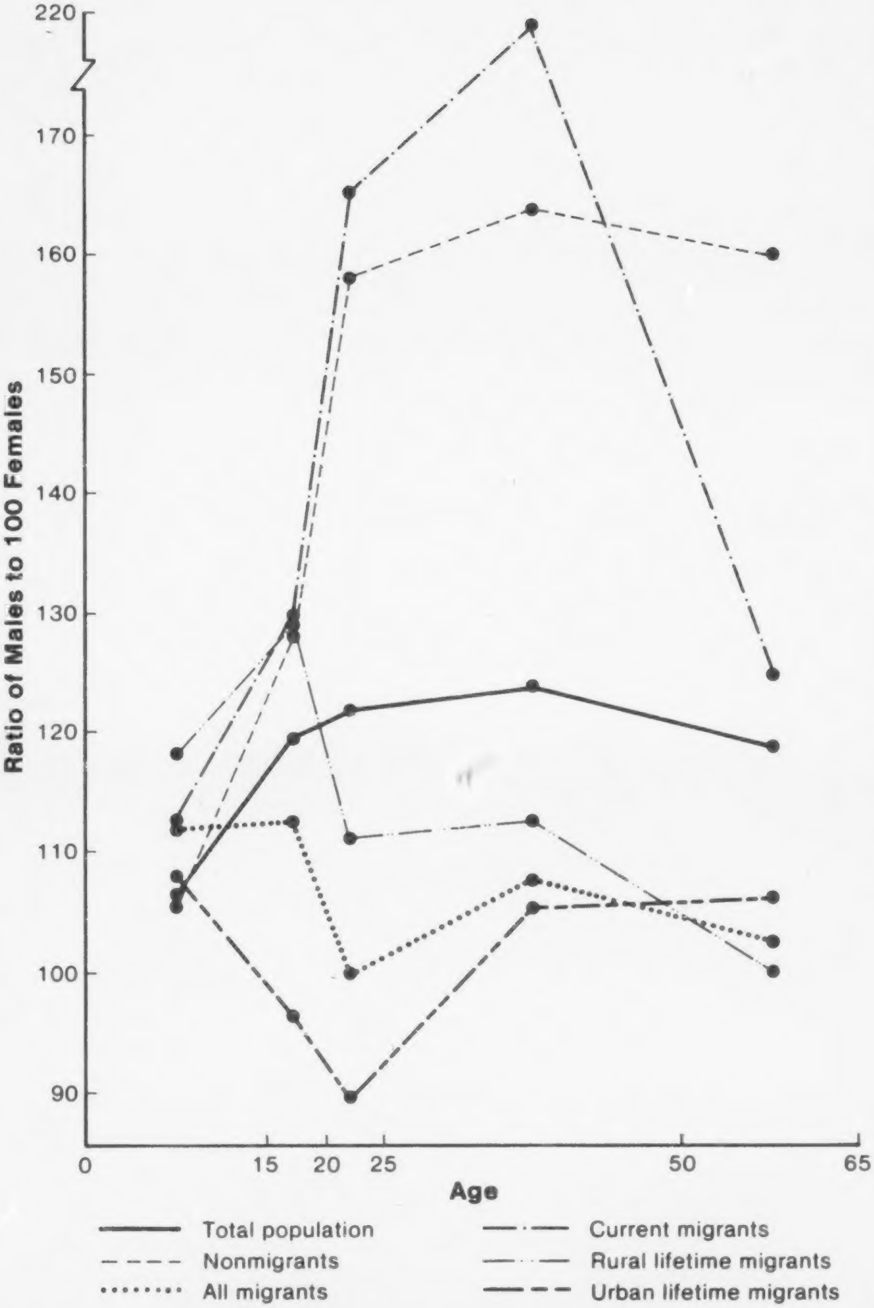

FIGURE 7. Sex ratios by age among the total population, nonmigrants, and migrants to cities: India, 1971

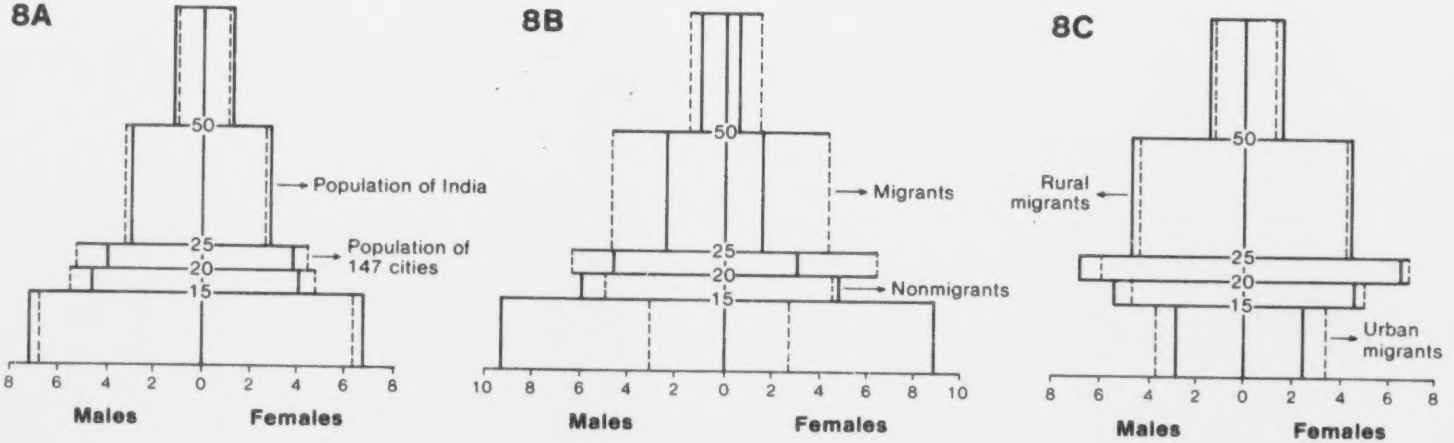

FIGURE 8. Age pyramids of the total population and specified subpopulations: India, 1971

than half of the total population, it being almost three-fifths among females (Table 8). Three reasons contribute to the pattern: (1) after marriage females shift to the husband's home, which is generally located outside the city of wife's birth; (2) although cities attract migrants from far and wide, they also send people to other cities (city-to-city migration), smaller urban areas, and even to rural areas, which causes a trough in the working age groups of the nonmigrant age pyramid (Figure 8B; Table 8); and (3) since the new cities have a comparatively large proportion of migrants, they have a smaller proportion of nonmigrants, especially above age 40. Children born to migrants at various destinations through the years are counted as nonmigrants; this raises the proportion of 0–14-year-olds among nonmigrants. In contrast, the proportion of migrant children below the age of 15 remained quite low (Figure 8B). Among children who were below 15 at the time of migration, many would have advanced to an older age group by the time of the census. This aspect becomes clearer from the comparison of the age distributions of current migrants and lifetime migrants (Table 8).

Young migrants below the age of 15 from urban areas constituted a significantly higher proportion than those from rural areas (Figure 8C and Table 8) owing to a higher proportion of family migration. This tendency seems to have been more prevalent among intradistrict current migrants.

Marital status

Certain interesting observations can be made about the marital status of migrants from data on their sex-age-marital status published for the first time in the 1971 census. Since the tabulations provide information as of the census date and not as of the time of migration, they conceal changes in marital status that might have taken place between the two time points. The data on current migrants, however, can be taken to represent fairly accurately the picture of marital status at the time of the move. Assuming that most women in India marry before reaching age 25, we may also assume that the proportion of married women below age 25 among current migrants is the extent of marriage migration to class I cities. The migration of unmarried females in the age group 15–24, especially 20–24, may be assumed to represent migration to pursue higher studies or employment. Migration of unmarried females 25 years and older is assumed to be for economic

TABLE 8. Age percentage distributions of the total population, nonresidence: India, 1971

			Total migrants		Migrants
					Rural
Sex and age group	Total population	Nonmigrant population	Lifetime	Current	Lifetime
Both sexes					
0–14	39.36	54.32	17.32	29.45	15.70
15–19	10.24	10.59	9.51	14.04	10.00
20–24	9.78	7.71	12.77	16.80	13.32
25–49	30.28	20.03	45.47	32.02	45.66
50+	10.34	7.35	14.93	7.69	15.31
All ages	100.00	100.00	100.00	100.00	99.99
Males					
0–14	20.32	27.92	9.12	15.35	8.42
15–19	5.54	5.86	4.93	7.60	5.47
20–24	5.35	4.61	6.32	10.06	6.86
25–49	16.70	11.95	23.27	21.45	23.57
50+	5.55	4.26	7.44	4.19	7.45
All ages	53.46	54.60	51.08	58.66	51.78
Females					
0–14	19.05	26.40	8.20	14.09	7.28
15–19	4.70	4.73	4.58	6.44	4.53
20–24	4.43	3.10	6.45	6.73	6.46
25–49	13.58	8.07	22.20	10.57	22.10
50+	4.79	3.09	7.49	3.50	7.85
All ages	46.54	45.40	48.92	41.33	48.22

reasons while migration of married females may be considered primarily associational–accompanying the husband to his new place of work.

Marital status distribution of the migrants (Table 9) shows that the proportion of unmarried persons of both sexes was much higher among current migrants than lifetime migrants. This was mainly because the marital status of many migrants changes–through marriage, widowhood, divorce, or separation–after they reach their destinations. Migrants from urban areas had greater proportions of unmarried persons of both sexes, which is understandable since the age at marriage in urban areas is higher than in rural areas (Goyal, 1975:337). The migrants, and lifetime and current migrants to cities by place of last

with last residence in India			Migrants with last residence within the district of enumeration			
	Urban		Rural		Urban	
Current	Lifetime	Current	Lifetime	Current	Lifetime	Current
27.74	21.32	32.05	15.89	29.74	21.46	35.05
16.55	9.69	11.25	10.30	15.45	10.29	12.57
17.56	12.85	16.10	12.46	15.26	12.42	14.74
30.32	43.49	33.49	44.88	30.47	42.64	30.56
7.83	12.65	7.12	16.47	9.09	13.19	7.07
100.00	100.00	100.01	100.00	100.01	100.00	99.99
14.71	11.05	16.41	8.41	15.38	11.21	18.54
9.49	4.66	5.44	5.31	8.26	4.65	5.66
11.01	5.95	9.06	5.83	9.55	5.43	7.83
20.53	21.88	22.30	21.16	20.28	20.09	20.04
4.18	6.40	3.85	7.54	5.01	6.36	3.94
59.91	49.94	57.07	48.25	58.50	47.74	56.01
13.03	10.27	15.64	7.48	14.35	10.25	16.51
7.06	5.03	5.81	4.99	7.18	5.63	6.91
6.55	6.90	7.03	6.63	5.70	6.99	6.91
9.80	21.61	11.18	23.72	10.19	22.55	10.53
3.65	6.25	3.26	8.92	4.07	6.83	3.13
40.09	50.06	42.93	51.75	41.50	52.26	43.99

data on the marital status of current migrants indicate that at the time of migration to cities more than half (53.6 percent) of the males and about two-fifths of the females were unmarried; the proportion of widowed, divorced, or separated current migrants was small—only about 4 percent (Table 9).

The marital status patterns of lifetime and current migrants in the age group 0–14 was almost the same (Table 10), with slightly higher proportions of married persons among current migrants. The proportion of married persons—both males and females—in age group 15–24 among current migrants was significantly higher than among lifetime migrants and, in turn, the proportion of unmarrieds was significantly

TABLE 9. Marital status percentage distributions of lifetime and current migrants to cities by sex and by rural and urban character of place of last residence: India, 1971

	Lifetime migrants			Current migrants		
Place of last residence and sex	Unmarried	Married	Widowed, divorced, and separated	Unmarried	Married	Widowed, divorced, and separated
Total migrants						
Both sexes	31.74	61.19	6.99	48.53	47.47	3.95
Males	40.00	57.02	2.88	53.62	44.40	1.92
Females	23.35	65.40	11.21	41.35	51.88	6.76
Resided in India (rural)						
Both sexes	29.12	63.28	7.55	47.06	48.60	4.31
Males	37.92	58.94	3.05	52.81	45.17	1.98
Females	19.91	67.85	12.21	38.50	53.88	7.61
Resided in India (urban)						
Both sexes	37.34	56.87	5.71	50.64	45.75	3.58
Males	45.48	51.98	2.42	55.37	42.74	1.84
Females	29.49	61.48	8.98	44.49	49.61	5.88

NOTE: Percentages for marital status do not always sum to 100 because in certain cases marital status was not specified.

lower. In contrast, the proportion of unmarried persons of both sexes was higher among current migrants in upper age groups. Various socioeconomic factors seem to have generated these differentials among lifetime and current migrants. There was probably a greater tendency among the married male migrants in the age group 15–24 to move to a new destination with a wife (and possibly children).

Literacy and educational attainment

Studies conducted in India show that migrants to the cities generally have lower educational attainment than nonmigrants and are placed in low-paid urban occupations—what has been termed the urban informal sector (Zachariah, 1968:167, 341–42; Mitra et al., 1980:67–68). Reviewing research findings on social change and internal migration, Simmons et al. concluded on the basis of Asian studies, however, that migrants are not the "dregs of society" or illiterate laborers but are more educated than those they leave behind (Simmons et al., 1977:55). We believe that migrants generally possess higher levels of

TABLE 10. Marital status percentage distributions of lifetime and current migrants to the cities by age group, sex, and duration of residence: India, 1971

Age group and marital status	Lifetime migrants			Current migrants		
	Both sexes	Males	Females	Both sexes	Males	Females
0–14						
Unmarried	98.50	99.50	97.31	98.07	99.34	96.51
Married	1.44	0.44	2.62	1.90	0.62	3.46
Widowed, separated, and divorced	0.01	0.01	0.02	0.01	0.004	0.02
15–24						
Unmarried	52.77	78.47	27.20	52.11	74.21	23.94
Married	46.69	21.10	72.16	47.40	25.48	75.37
Widowed, separated, and divorced	0.40	0.24	0.56	0.43	0.23	0.66
25–49						
Unmarried	5.78	9.79	1.46	10.15	13.81	2.77
Married	89.95	88.18	91.99	86.17	84.11	90.61
Widowed, separated, and divorced	4.22	1.96	6.54	3.63	2.01	6.59
50+						
Unmarried	1.42	2.29	0.54	2.54	3.58	1.08
Married	65.00	84.59	45.63	61.99	80.32	40.33
Widowed, separated, and divorced	33.48	12.97	53.79	35.40	16.04	58.49

NOTE: Percentages for marital status do not always sum to 100 because in certain cases marital status was not specified.

education than do nonmigrants in the cities. When educational attainment is controlled, migrants are found in higher proportions in white-collar jobs than are nonmigrants.

We expected that the longer the distance traveled, the better educated the migrants would be–specifically, that the educational levels of the interstate migrants would be higher than those of intradistrict or interdistrict migrants. The definition of literacy in the Indian census is "ability to read and write simple letters in any language with understanding." To test our hypothesis, we computed literacy rates by placing total population (including children below age 5) in the denominator, since the detailed age breakdown of literates, total

TABLE 11. Literacy rates of nonmigrants, migrants (classified by mi-
1971

City characteristics and sex of population group	Cities (N)	Nonmigrants	Total migrants
All cities			
Both sexes	147	48.2	61.6
Males	147	55.4	74.3
Females	147	39.6	48.5
City size			
1,000,000+	9	54.8	64.3
500,000–999,999	10	48.2	62.5
200,000–499,999	54	48.8	62.9
100,000–199,999	74	47.0	60.2
Growth rate			
High	68	49.0	62.7
Medium	51	47.6	61.1
Low	26	48.1	60.1
Functional specialization			
Manufacturing	68	48.1	60.1
Trade and transport	58	48.5	62.3
Service	21	48.0	64.3
Length of existence as class I city			
Before 1901	25	49.9	62.7
1901–41	24	49.2	62.6
After 1941	87	48.6	60.9
New cities	10	37.7	61.3
Regional type			
Himalayan	6	51.3	63.5
Upper Ganga plains	24	44.4	58.1
Middle and lower Ganga plains	21	43.3	59.1
Central plateau	27	46.3	61.0
Deccan plateau	35	49.2	61.0
Coastal plains	34	53.9	66.2

population, and migrants to each city is not available. The formula used is:

$$\text{literacy rate} = \frac{\text{number of literate and educated persons in any subcategory or area}}{\text{total population of that subcategory or area}} \times 100$$

gration stream), and migrant workers by city characteristic: India,

Migrants with last residence in India				
Total	Elsewhere in the district	In other districts of the same state	In other states	Migrant workers
61.3	54.2	66.2	66.1	71.8
73.9	71.3	76.7	74.4	75.7
48.4	38.6	55.2	56.4	41.7
62.8	57.4	64.8	65.7	72.3
62.1	46.7	66.4	71.5	73.5
62.6	54.2	67.5	67.7	72.5
60.0	55.0	65.5	64.3	71.0
62.4	56.6	66.8	64.7	71.8
60.7	51.9	66.2	68.1	71.7
60.0	54.1	65.1	66.4	72.9
59.8	53.0	64.3	65.1	70.6
61.9	56.3	67.4	65.8	72.1
64.2	52.8	69.7	70.4	75.0
61.9	50.3	64.9	68.6	72.7
62.5	53.6	69.1	69.1	73.3
60.7	56.1	65.7	65.2	71.2
61.3	49.0	65.2	60.9	71.1
63.8	55.5	70.4	69.0	70.4
57.7	48.6	60.9	65.1	70.9
58.1	47.9	66.6	67.2	71.4
60.6	49.7	63.8	64.8	71.3
61.0	56.9	66.7	63.4	70.6
66.1	63.2	70.2	69.6	74.7

Table 11 shows literacy rates of nonmigrants and migrants by city characteristic, migrants being further classified by migration streams. Literacy rates of migrants were much higher than those of nonmigrants, probably because of variations in the age composition of the two subpopulations.[13] The differences were greater for males than for females.

Literacy rates of intradistrict migrants were consistently lower than of interdistrict or interstate migrants in all city categories classified according to city characteristics. This finding implies that illiterate migrants generally travel short distances because (1) they tend to be poor, have almost no entrepreneurial skills, and do not have the resources to go farther; (2) they do not receive as much information as the literates do about job opportunities of far-off places; and (3) as unskilled workers, they do not believe that they would receive higher wages by traveling long distances. Therefore, illiterate migrants prefer to move to the nearest city, which generally is only of local economic importance. No significant literacy-rate differences were found among interdistrict and interstate migrants in most categories when the migrants were classified according to city characteristics.

Although the literacy rate of total migrants to the metropolises was higher than for other cities, the difference became significant only between the largest and smallest city classes (Table 11). The literacy rate of migrants to service cities was higher than that of migrants to cities in the other functional specializations, but it became significant only in comparison with the rate for the manufacturing cities. The difference was probably due to inmigration of higher proportions of illiterates to manufacturing cities. Literacy rates of migrants to cities in the Indo-Gangetic plains (regions 2 and 3) were significantly lower than the rates of migrants to coastal-plains cities.

Of the 31 cities with more than 50 percent of the intradistrict migrants, 22 were in the Deccan plateau and coastal-plains regions; however, the literacy rates of these two regions were not the lowest (Table 11). The low literacy rates of intradistrict migrants have probably pulled down literacy rates in the cities of these two regions.

The literacy rates of migrant workers were higher than the rates for total migrants in all city categories. However, the literacy rate of female migrant workers was lower than the rate for all female migrants (Table 11). This may mean that a majority of the women workers in these cities were engaged in unskilled jobs or that a majority of literate and educated women migrated to the cities to marry or to accompany the family breadwinner and may not have taken jobs after moving to the cities.

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[13] The literacy rates of the nonmigrants and the migrants are not strictly comparable because of the difference in age composition of the two subpopulations—nonmigrants having a considerably larger proportion of children below the age of 15 and migrants a much larger proportion above the age of 25. But one expects almost all children above the age of 7 or 8 in the cities to be literate. This, along with the higher sex ratio of nonmigrants in higher age groups, should lead to higher literacy rates. On this assumption we compare the literacy rates of the nonmigrant and the migrant subpopulations of class I cities. It would be more valid to compare the literacy rates of workers in the two subpopulations for a set of selected cities.

The distribution of male, female, and total migrants by levels of education (Figure 9 and Table 12) shows that a little more than one-fifth of the total migrants were educated at least to the high school level (a minimum of ten years of schooling). The proportion was three-tenths among males and a little more than one-tenth among females.

As for educational levels of migrants in different migration streams, we expected that the longer the distance migrants traveled, the better educated they would be. In the absence of data on actual distances traveled by migrants from last residence to the current one, we assumed that the interstate migration stream represented long-distance movement, interdistrict the medium-distance, and intradistrict the short-distance movement. The educational levels of interstate migrants should, therefore, be higher than those of interdistrict migrants, and their educational levels, in turn, should be higher than those of intradistrict migrants. Our data indicate that the proportions of intradistrict migrants in higher educational categories were smaller than those of interdistrict and interstate migrants. The differences became statistically significant with middle (eighth grade) or higher levels of education. Further, the differences were sharper in the case of females (Figure 9).

For the two sexes combined there was hardly any difference between the distribution of interdistrict and interstate migrants (the index of dissimilarity[14] being equal to one). This may indicate that migrants in the two streams traveled similar distances in moving to their current destinations, or that distances beyond a certain range did not make any difference in the educational attainment of the migrants. When a comparison is made by sex, however, the proportions of male migrants with high school (more than ten but fewer than 14 years of schooling) and with graduate (more than 14 years) levels of

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[14] The index of dissimilarity is defined as half the sum of the absolute differences (without regard to signs) of two percentage distributions relating to the same or similar items.

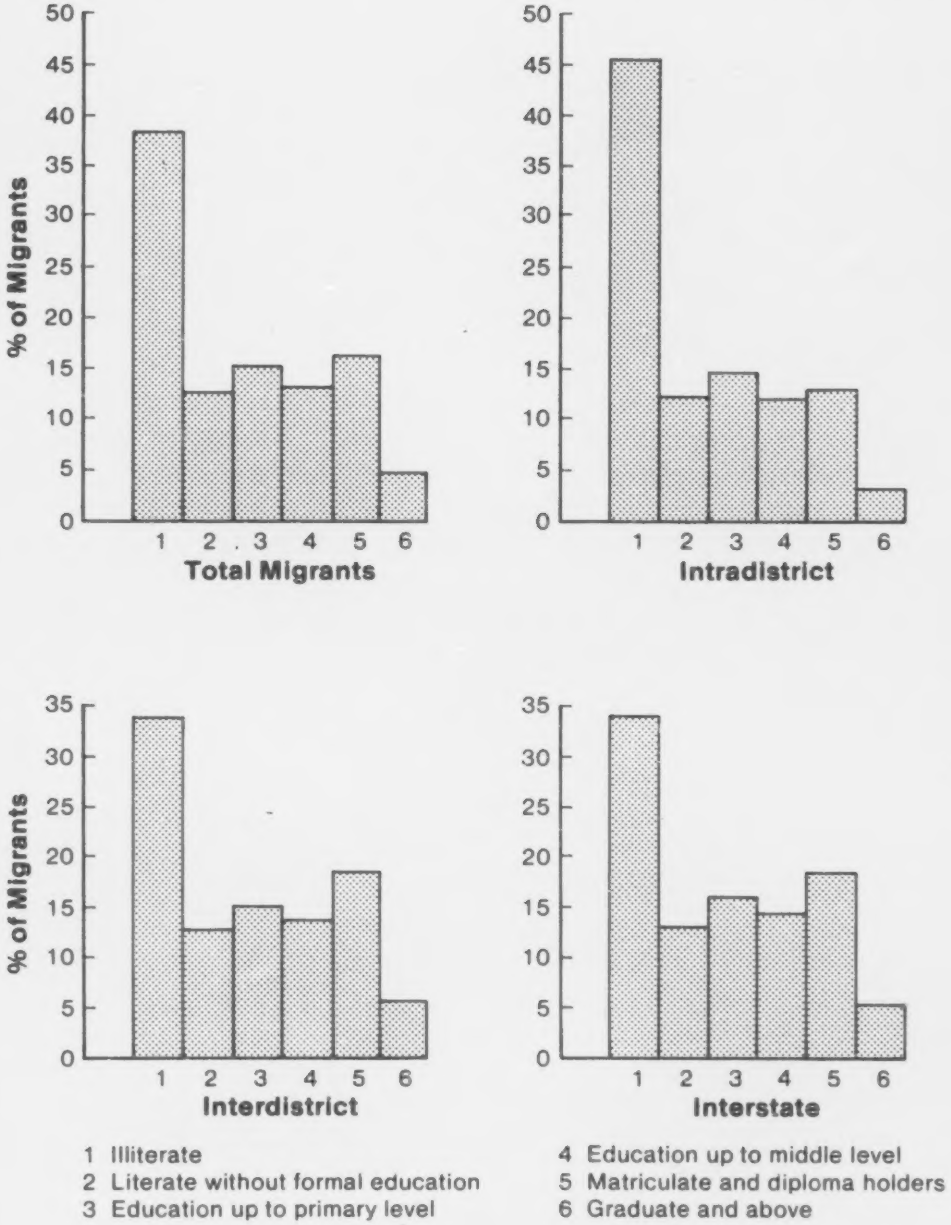

FIGURE 9. Distribution of migrants by educational attainment in different migration streams: India, 1971

TABLE 12. Percentage distributions of migrants in different migration streams and of migrant workers of each sex by education: India, 1971

Migration stream and sex	Cities (N)	Educational level: Illiterate	Literate without formal education	Up to primary level	Primary to middle level (8th grade)	High school and diploma	Graduate and above	All levels
Total migrants								
Both sexes	147	38.43	12.59	15.27	13.03	16.09	4.59	100.00
Males	147	25.66	13.17	15.89	15.28	22.95	7.05	100.00
Females	147	51.54	12.06	14.70	10.75	8.95	2.00	100.00
Last residence in India								
Both sexes	147	38.73	12.60	15.13	12.93	15.99	4.62	100.00
Males	147	26.11	13.18	15.72	15.11	22.77	7.12	100.01
Females	147	51.60	12.06	14.59	10.74	9.00	2.02	100.01
Last residence elsewhere in district of enumeration								
Both sexes	144	45.75	12.34	14.63	11.66	12.75	2.87	100.00
Males	144	28.72	13.73	16.20	15.45	20.77	5.12	99.99
Females	144	61.43	11.16	13.24	8.19	5.22	0.77	100.01
Last residence in other districts of the state								
Both sexes	145	33.76	12.78	15.18	13.92	18.38	5.99	100.01
Males	145	23.28	12.75	14.71	14.82	25.25	9.22	100.03
Females	145	44.78	12.90	15.71	13.01	11.06	2.54	100.00
Last residence in other states								
Both sexes	147	33.87	13.03	15.75	13.99	18.06	5.30	100.00
Males	147	25.65	13.42	16.20	15.02	22.59	7.12	100.00
Females	147	43.55	12.62	15.22	12.59	12.79	3.23	100.00
Migrant workers								
Both sexes	147	28.19	10.48	15.52	14.42	22.75	8.64	100.00
Males	147	24.27	11.19	16.89	15.52	23.41	8.72	100.00
Females	147	58.29	4.41	4.90	5.44	17.55	9.42	100.01

TABLE 13. Percentage distributions of male and female migrants by

		Males			
City characteristics	Cities (N)	Illiterate	Literate without formal education	Up to primary level	Primary to middle level (8th grade)
All cities	147	25.66	13.17	15.89	15.28
City size					
1,000,000+	9	26.55	11.81	15.94	14.91
500,000–999,999	10	24.27	13.86	15.82	12.78
200,000–499,999	54	25.79	12.86	15.29	14.59
100,000–199,999	74	25.65	13.46	16.33	16.16
Growth rate					
High	68	25.79	13.09	16.51	15.51
Medium	51	25.74	13.15	15.40	14.23
Low	26	24.83	13.22	15.68	16.38
Functional specialization					
Manufacturing	68	26.73	13.86	16.48	15.17
Trade and transport	58	25.13	12.57	16.41	15.72
Service	21	23.68	12.58	12.56	14.39
Length of existence as class I city					
Before 1901	25	26.09	12.39	15.31	13.62
1901–41	24	24.91	13.12	16.27	14.08
After 1941	87	25.59	13.46	16.34	15.91
New cities	10	27.42	12.41	11.91	16.60
Regional type					
Himalayan	6	26.68	10.56	12.21	18.12
Upper Ganga plains	24	29.15	12.16	13.04	13.23
Middle and lower Ganga plains	21	25.64	11.70	10.71	15.59
Central India plateau	27	26.22	17.52	14.04	11.95
Deccan plateau	35	25.29	11.42	18.52	17.93
Coastal plains	34	22.97	13.59	20.52	15.93

education were much higher among interdistrict migrants than among interstate migrants, the differences being statistically significant. In contrast, among females the proportions of high school completers and diploma holders and of college graduates and above were significantly higher among the interstate migrants than interdistrict migrants. Thus, while the finding for males negates our assumption, the finding for females does not. As an explanation for the particular pattern for males, we suspect that in cities located near state borders, there is substantial interstate migration between bordering districts. Although hard data are not available to confirm this theory, we find that of the education of each sex by city characteristic: India, 1971

		Females					
High school and diploma	Graduate and above	Illiterate	Literate without formal education	Up to primary level	Primary to middle level (8th grade)	High school and diploma	Graduate and above
22.95	7.05	51.54	12.06	14.70	10.75	8.95	2.00
22.99	7.80	47.81	10.94	15.20	11.60	11.61	2.83
24.22	9.04	51.86	12.89	13.33	9.22	10.18	2.92
23.98	7.49	49.44	12.05	14.62	11.03	10.39	2.47
22.02	6.37	53.48	12.15	14.89	10.64	7.40	1.44
22.32	6.77	50.09	11.99	15.09	11.31	9.40	2.12
23.86	7.63	52.00	12.47	14.41	10.02	9.02	2.07
23.23	6.64	53.16	11.64	14.99	10.82	7.85	1.57
21.48	6.29	53.20	12.13	14.30	9.99	8.58	1.81
23.52	6.64	50.41	11.99	15.98	11.45	8.54	1.63
26.13	10.66	49.25	12.07	12.49	11.26	11.28	3.65
24.13	8.45	50.37	11.54	14.08	10.25	10.94	2.81
24.15	7.46	49.68	11.75	15.07	10.66	10.48	2.36
22.21	6.48	52.32	12.32	15.05	10.72	7.97	1.61
23.95	7.70	52.39	11.77	12.00	12.39	8.86	2.58
22.92	9.51	48.96	10.25	12.32	14.09	10.86	3.49
24.54	7.88	54.96	10.36	12.33	9.09	10.36	2.89
26.41	9.95	55.68	11.41	11.45	11.36	7.82	2.30
22.85	7.41	52.94	15.62	11.97	8.13	9.05	2.30
21.80	5.04	53.09	9.94	15.90	11.99	7.96	1.11
20.96	6.04	44.30	13.35	19.74	11.74	9.25	1.61

24 cities with high proportions of total migrants in the interstate stream, six were in border districts and three were union territories.[15]

A comparison of educational backgrounds of male migrants according to city characteristics indicates that those with high school or higher educational attainment comprised 33.3 percent in cities of a half-million to one million inhabitants but only 28.4 percent in cities with populations between 100,000 and 200,000 (Table 13). No significant differences existed in educational levels according to the cities' growth rates, but manufacturing cities had a significantly lower percentage (27.8) of male migrants with at least a high school education than did service cities (36.8 percent). It is noteworthy that the proportion of male migrants with high school or higher educational attainment was lower in the Deccan plateau and coastal-plains cities than in the cities of the middle and lower Ganga plains. Cities of the Deccan plateau and coastal plains had larger shares of intradistrict migrants and the migrants had lower proportions of highly educated people. A similar analysis of educational levels of female migrants can be made from the data contained in Table 13.

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[15] Of the three union territories, Chandigarh and Delhi are not further subdivided into districts; the districts of Pondicherry are noncontiguous.

Our analysis of literacy rates of lifetime migrant and nonmigrant workers in the 20 cities for which data are available (Table 14) shows that there was no significant difference between the proportion of literates (76.2 percent among male migrants and 74.0 percent among male nonmigrants) when the comparison is made using the eight million-plus cities (all except Calcutta). The difference in the proportion of literates (77.6 percent among migrant and 67.6 percent among nonmigrant workers), however, becomes significant when the comparison is made with all 20 cities. The situation was similar for female workers.

Moreover, with respect to educational attainment, the proportion of male migrant workers with high school and other diplomas and in graduate and above categories was significantly higher than the proportion of nonmigrants (Table 14), whether we make the comparison using the eight metropolises or all 20 cities. Among women, although the proportion of migrant workers in both these educational categories was higher than that of nonmigrant workers, the differences were significant only when all 20 cities were considered together. These data on 20 cities establish superiority of migrant workers over nonmigrant ones in educational attainment. Our finding implies that migrants, particularly males, move to the cities because they are mainly attracted by better job opportunities there, not because of poor conditions in rural areas. The finding that migrants are not the "dregs of society" (Simmons et al., 1977:55) is further confirmed.

Work participation rates

Since male migration to the cities occurs primarily for economic reasons, one might reasonably expect male work participation rates

TABLE 14. Percentage distributions of male and female migrant and nonmigrant workers by education: 20 selected cities of India, 1971

	All 20 cities				8 metropolises			
	Males		Females		Males		Females	
Educational level	Migrant	Nonmigrant	Migrant	Nonmigrant	Migrant	Nonmigrant	Migrant	Nonmigrant
Literate and educated	77.6	67.6	54.1	43.6	76.2	74.0	52.4	52.6
Literate without formal education	11.3	12.7	3.9	5.2	10.3	11.0	3.6	4.6
Up to primary level	15.4	17.7	4.2	5.2	16.7	19.1	5.0	6.8
Primary to middle level	14.9	15.0	6.1	5.6	15.1	17.9	5.8	7.1
High school and diploma	25.6	17.3	25.0	17.6	24.7	20.5	25.6	23.5
Graduate and above	10.4	5.0	15.0	9.9	9.3	5.5	12.4	10.6

NOTES: Table excludes cultivators and agricultural laborers, if any. Here, the percentage of migrant workers of a particular sex with a specific level of educational attainment equals the number of migrant workers of that sex having the given level of educational attainment divided by the total number of migrant workers of that sex, multiplied by 100. The percentage of nonmigrant workers of a particular sex with a specific level of educational attainment equals the number of district urban workers of that sex having the particular educational attainment minus the number of migrant workers of that sex and educational attainment divided by the number of district urban workers of that sex minus the number of migrant workers of that sex, multiplied by 100.

(WPRs)[16] in all age groups to be higher than those of nonmigrants. In contrast, as females migrate mainly because of marriage or to accompany the family breadwinner rather than to seek employment, their WPRs are expected to be lower than those of nonmigrant women. This would particularly apply to the younger age group. With older women it is probable that after a certain lapse of time they become economically active, either by taking a job or by becoming self-employed. Since the age distributions of migrants and nonmigrants were quite different (Figure 6), it would not have been very useful to compare their overall WPRs. Table 15 therefore gives the WPRs of migrants and nonmigrants separately by sex for the 15–29 and 30–59 age groups. As all able-bodied males above the age of 25 or 30 were expected to be gainfully employed, there was little difference in the WPRs of migrants and nonmigrants in the age group 30–59, although the rate was slightly higher for migrants (93.5 percent compared with 92.9 percent). The WPR of male migrants in the 15–29 age group (61.9 percent), however, was significantly higher than that of nonmigrants (56.5 percent), and it applied to all categories of cities (Table 15). But in many cases the differences were not statistically significant. Since almost two-fifths of male migrants 15–29 could not be unemployed, a substantial proportion had probably come to the cities to pursue higher educations.

Data on enrollment of males 15–29 are not available for 1971. From 1981 census tabulations, however, some estimates are possible. Among 25.0 million urban males in that age group, 25.6 percent were attending school or college. It is likely that some of them also were working. Of the total, 15.8 percent had completed high school and were pursuing higher studies. They can be assumed to have been full-time students. Of the 3.7 million 15–29 year old male lifetime migrants to urban areas with employment as the main reason for migration, 7.5 percent were nonworkers (Census of India 1981, 1984:200–203, 360–61). As the conditions in 1971 differed little from those in

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[16] The work participation rate is defined as: $w_{ij} = \frac{W_{ij}}{P_{ij}} \times 100$, where w_{ij} = work participation rate of sex i in age group j, W_{ij} = Workers of sex i in age group j, and P_{ij} = Population of sex i in age group j. In the computation of the overall work participation rates for a particular category all workers in that category are taken in the numerator and total population of that category (including all children and old people) are taken in the denominator.

TABLE 15. Work participation rates of male and female migrants and nonmigrants by city characteristic and age group: India, 1971

City characteristics	Cities (N)	Migrants				Nonmigrants			
		Males		Females		Males		Females	
		15–29	30–59	15–29	30–59	15–29	30–59	15–29	30–59
All cities	147	61.9	93.5	7.7	11.4	56.5	92.9	8.0	14.9
City size									
1,000,000+	9	72.4	94.6	8.1	10.6	52.9	92.0	7.2	12.6
500,000–999,999	10	62.0	92.1	6.1	10.6	57.1	93.2	6.4	13.6
200,000–499,999	54	63.9	93.9	8.1	11.1	56.0	92.6	8.2	14.1
100,000–199,999	74	59.2	93.3	7.6	11.7	57.3	93.1	8.1	16.0
Growth rate									
High	68	65.6	94.3	8.9	13.0	56.5	93.0	8.9	16.6
Medium	51	58.6	93.3	6.4	9.7	57.2	93.2	7.1	13.2
Low	26	57.8	92.4	6.2	9.3	55.4	92.3	6.7	13.0
Functional specialization									
Manufacturing	68	64.6	93.2	8.2	12.2	57.9	92.5	8.9	16.4
Trade and transport	58	59.2	93.9	7.3	11.0	56.1	93.2	7.4	14.6
Service	21	60.8	93.4	7.2	9.5	53.3	93.0	6.6	11.1
Length of existence as class I city									
Before 1901	25	67.2	93.4	6.2	9.1	56.4	92.6	6.0	10.9
1901–41	24	60.6	93.1	7.7	10.4	55.6	92.7	7.7	14.1
After 1941	87	60.0	93.4	8.1	12.2	57.0	92.9	8.5	16.4
New cities	10	68.1	96.2	7.8	11.2	55.4	94.0	8.5	14.5
Regional type									
Himalayan	6	64.3	92.3	7.9	11.5	44.0	89.1	8.0	15.0
Upper Ganga plains	24	66.8	93.3	4.6	6.0	57.3	92.9	4.4	7.6
Middle and lower Ganga plains	21	53.0	92.6	4.2	6.5	52.9	91.7	3.9	8.3
Central India plateau	27	65.0	94.7	7.8	12.0	56.6	93.6	7.4	16.7
Deccan plateau	35	59.2	93.7	8.9	14.2	59.3	93.8	10.3	18.9
Coastal plains	34	63.9	93.3	10.8	14.6	57.5	92.6	11.0	18.6

1981, one may conclude that of the two-fifths of male migrants 15–29 who were nonworkers in 1971, a large number of them were full-time students.

Although the WPRs of migrant and nonmigrant females in the age group 15–29 were almost the same, the WPR was significantly higher for nonmigrant women 30–59 than for migrant women (14.9 percent compared to 11.4 percent). This finding contradicts our expectation. Two explanations for this contradiction are: (1) older women, especially among migrants, had less education, were more traditional, and considered their prime responsibility to be caring for the home, husband, and children; and (2) since job opportunities, particularly in white-collar occupations, have been limited, it is almost impossible for women past a certain age to enter the labor force. Also, a city-born woman is at an advantage in getting a job at a younger age and may continue with the same job until reaching retirement age. These factors raised the WPR of nonmigrant females in the older age group.

WPRs of migrant males in the 15–29 age group differed significantly when analyzed according to city characteristics (Table 15). For example, the WPR in metropolises was significantly higher than the rate in the smallest size class of cities. It was also higher in cities with high growth rates and in manufacturing cities. Cities that qualified for class I status before 1901 and comparatively new cities also had higher WPRs than other cities. The WPRs of both migrants and nonmigrants in cities of the middle and lower Ganga plains region were much lower than the WPRs in other regions, probably indicating fewer job opportunities there. In six cities of northern Bihar the WPRs of migrant males 15–29 were below 50 percent.

Although the WPR of migrant males 15–29 was highest in the million-plus cities, the WPR of nonmigrant males was lowest, the difference being highly significant. The reasons for this difference probably can be understood more clearly when the industrial and occupational classifications of the two worker categories are examined.

Similar differentials can be found in the WPRs of migrant and nonmigrant females in the two age groups by city characteristics. The WPR for female migrants of ages 30–59 was higher in the smallest size class cities than in those of other size classes. The WPR of female migrants was higher in cities with high growth rates and in manufacturing cities, a pattern similar to one observed for male migrants. The regional pattern of female WPRs was also similar to that of males.

The proportion of migrant workers in the city population is generally believed to be small compared with that of nonmigrant workers. The ratios of migrant workers to nonmigrant workers by sex and by two broad age groups–15–29 and 30–59–according to city characteristics (Table 16), however, indicate that migrant workers outnumbered nonmigrant workers by a ratio of 4:3. The ratio was somewhat higher for females than for males and was significantly higher in the older age group for both males and females. For male workers the metropolises had the highest ratio when considered on the basis of city size. Similarly, the ratio was higher in cities with high growth rates and cities that specialized in administrative and service functions. The ratio of migrant to nonmigrant workers was 3:1 in the comparatively new cities, indicating that migrants largely managed the economies of these cities. This ratio was more than two in the Himalayan region but less than one in the middle and lower Ganga plains and just more than one in cities of the Deccan plateau.

Industrial classification of workers

The industrial classification of workers generally reflects the economic structure of the working population and the functional specialization of the settlements. The differences in placement of nonmigrant and migrant workers, particularly when the latter are classified by migration streams, indicate the nature of pulls, or attractions, of the city economy and reflect the extent to which migrants and nonmigrants modify the overall pattern of economic activity. In the case of Bombay migrants were overrepresented in blue-collar and unskilled occupations whereas nonmigrants were overrepresented in white-collar occupations because of the difference in their educational levels (Zachariah, 1968:342). Mitra et al. concluded that migrants to the cities had little skill, education, and training, and therefore most of them were absorbed in either low-grade services or in low-grade production process activities and indigenous means of transport (Mitra et al., 1980:67).

The industrial classification of all workers, nonmigrant workers, and migrant workers by sex (Table 17)[17] indicates that at the time of

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[17] Whereas information for the total and male migrant workers in Table 17 includes a breakdown by migration stream, for females it is limited to total migrants with a breakdown only by rural-urban origin at the national level. Further classification into other migration streams is not presented for them

TABLE 16. Ratios of migrant to nonmigrant workers by city characteristic, sex, and age group: India, 1971

City characteristics	Cities (N)	Both sexes			Males			Females		
		All ages	15–29	30–59	All ages	15–29	30–59	All ages	15–29	30–59
All cities	147	1.31	1.18	1.62	1.33	1.13	1.62	1.47	1.28	1.72
City size										
1,000,000+	9	1.76	1.37	2.20	1.83	1.43	2.27	1.35	1.07	1.77
500,000–999,999	10	0.87	0.70	1.04	0.88	0.70	1.05	0.88	0.77	1.01
200,000–499,999	54	1.51	1.51	1.89	1.55	1.39	1.89	1.64	1.47	1.85
100,000–199,999	74	1.18	0.99	1.43	1.17	0.96	1.43	1.44	1.23	1.71
Growth rate										
High	68	1.82	1.76	2.24	1.87	1.66	2.25	1.90	1.71	2.13
Medium	51	0.88	0.66	1.13	0.87	0.65	1.13	1.09	0.93	1.38
Low	26	0.80	0.62	0.97	0.79	0.60	0.96	0.95	0.87	1.18
Functional specialization										
Manufacturing	68	1.38	1.27	1.63	1.40	1.27	1.66	1.56	1.26	1.72
Trade and transport	58	1.16	0.91	1.41	1.15	0.89	1.41	1.26	1.21	1.48
Service	21	1.52	1.64	2.17	1.59	1.32	2.09	1.78	1.51	2.35
Length of existence as class I city										
Before 1901	25	1.12	0.90	1.38	1.15	0.92	1.41	1.01	0.83	1.26
1901–41	24	0.93	0.67	1.29	0.93	0.66	1.29	1.07	0.87	1.45
After 1941	87	1.28	1.03	1.46	1.28	1.02	1.46	1.40	1.32	1.69
New cities	10	3.08	4.45	4.53	3.24	3.70	4.45	4.31	3.00	3.84
Regional type										
Himalayan	6	2.34	1.86	2.79	2.45	1.99	2.87	1.47	1.08	1.94
Upper Ganga plains	24	1.31	1.19	2.22	1.35	0.90	2.13	1.81	1.56	2.84
Middle and lower Ganga plains	21	0.83	0.69	0.96	0.83	0.68	0.96	0.93	0.94	1.02
Central India plateau	27	1.67	1.80	2.03	1.68	1.75	2.06	2.09	1.78	1.80
Deccan plateau	35	1.07	0.86	1.32	1.07	0.85	1.32	1.18	1.12	1.37
Coastal plains	34	1.39	1.19	1.39	1.41	1.20	1.42	1.38	1.09	1.60

the 1971 census 8.5 percent of all workers in class I cities were engaged in agriculture and allied primary activities. This proportion was significantly higher for nonmigrants than for migrants and for females compared with males. The high proportion probably was due to:

1. The expansion of many municipal boundaries before the 1971 census, bringing many peripheral villages within the municipal fold. Some people living in these villages continued to carry out agricultural activities long after the 1971 census.
2. The continued operation of animal husbandry—particularly to sell fresh milk—in a large majority of Indian cities. In some cities mining and quarrying are primary activities; in others the primary activities are fresh- and deep-water fishing.

Whereas the proportion of nonmigrant workers in the manufacturing sector was higher than that of migrant workers in manufacturing, the opposite was true with other services (Table 17). The trade and commerce industry and the transport and communications industry had similar proportions of migrant and nonmigrant workers.

In manufacturing cities that attract industrial labor from different places, one expects to find a higher proportion of migrant workers in manufacturing activity, but this was not so. Their proportion was only 32.7 percent compared with 38.7 percent of nonmigrant workers, possibly meaning that the industrial pull of these cities has not been as great as it is believed to be.

The service sector is a mixed sector that includes on one hand professional, technical, and related workers, and supervisory and clerical workers excluding those in manufacturing, trade, commerce, transport, and communications. On the other hand, the service sector includes those providing personal services—barbers, laundry workers, watchmen, domestic servants, and others. It is therefore difficult to analyze the nature of employment of migrants as compared with nonmigrants in this sector. A comparison of the occupational distributions of migrant and nonmigrant workers is expected to shed more light on their placement.

The migrants' places of origin seem to influence their sector of employment since a higher proportion of rural migrants were found engaged in primary and secondary sector activities. Consequently, a

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because their numbers in different cells at the city level were too small to provide reliable estimates of workers in different industrial categories.

TABLE 17. Percentage distributions of male and female workers by

	Type of industry			
Sex, migrant status, and migrant stream	Primary	Manufacturing	Construction	Trade and commerce
BOTH SEXES				
Total population	8.53	28.55	3.78	20.01
Nonmigrants	11.39	31.07	3.91	20.26
All migrants	6.22	24.45	3.35	19.73
Former residence				
India				
Rural	8.44	25.46	3.87	17.95
Urban	3.03	23.41	2.90	18.97
Elsewhere in same district				
Rural	11.79	23.90	3.63	17.57
Urban	4.61	23.47	3.14	18.58
In other districts of same state				
Rural	6.03	24.61	3.58	18.03
Urban	2.72	21.57	2.81	17.32
In other states				
Rural	4.12	25.87	3.35	23.90
Urban	2.56	25.89	2.65	23.50
MALES				
Total population	8.12	28.69	3.83	21.26
Nonmigrants	11.22	31.15	4.05	21.39
All migrants	5.46	24.67	3.33	21.16
Former residence				
India				
Rural	7.34	25.60	3.78	19.25
Urban	2.78	23.81	2.97	20.37
Elsewhere in same district				
Rural	10.15	24.13	3.64	18.91
Urban	3.95	23.38	3.19	19.97
In other districts of same state				
Rural	5.45	24.87	3.48	19.27
Urban	2.60	22.14	2.94	18.64
In other states				
Rural	3.82	26.26	3.28	25.27
Urban	2.38	26.58	2.68	25.07
FEMALES				
Total population	11.95	22.39	3.36	8.59
Nonmigrants	13.13	25.13	2.67	9.23
All migrants	11.71	18.99	3.55	8.12
Former residence				
India				
Rural	16.20	20.32	4.84	8.57
Urban	5.00	16.84	2.30	7.41

migrant status, migration stream, and industry: India, 1971

			Broad industrial category			
Transport and communication	Other services	Total	Primary	Secondary	Trade and transport	Service
11.69	27.42	100.00	8.53	32.34	31.71	27.42
10.74	22.57	99.94	11.39	34.98	31.00	22.57
12.56	33.70	100.01	6.22	27.80	32.29	33.70
12.19	32.04	99.95	8.44	29.33	30.15	32.04
13.60	38.09	100.00	3.03	26.31	32.58	38.09
11.46	31.64	99.99	11.79	27.54	29.03	31.64
12.72	37.49	100.01	4.61	26.61	31.30	37.49
12.98	34.77	100.00	6.03	28.19	31.01	34.77
13.94	41.63	99.99	2.72	24.38	31.26	41.63
12.18	30.58	100.00	4.12	29.22	36.08	30.58
13.39	32.02	100.01	2.56	28.54	36.89	32.02
12.57	25.52	100.00	8.12	32.53	33.83	25.52
11.53	20.61	99.95	11.22	35.19	32.92	20.61
13.59	31.79	100.00	5.46	28.00	34.75	31.79
13.21	30.77	99.95	7.34	29.38	32.46	30.77
14.70	35.36	99.99	2.78	26.79	35.07	35.36
12.63	30.54	100.00	10.15	27.77	31.53	30.54
14.01	35.50	100.00	3.95	26.57	33.98	35.50
13.99	32.94	100.00	5.45	28.35	33.26	32.94
15.22	38.47	100.01	2.60	25.08	33.86	38.47
12.75	28.62	100.00	3.82	29.54	38.02	28.62
14.22	29.07	100.00	2.38	29.26	39.29	29.07
3.96	49.76	100.00	11.95	25.74	12.55	49.76
3.65	46.15	99.96	13.13	27.80	12.88	46.15
4.04	53.59	100.00	11.71	22.54	12.16	53.59
4.16	45.90	99.99	16.20	25.16	12.73	45.90
3.88	64.57	100.00	5.00	19.13	11.29	64.57

TABLE 18. Percentage distributions of male and female migrant

City characteristics	Cities (N)	Occupational division (males) 0–1	2	3	4
All cities	147	9.41	4.51	16.50	14.33
City size					
1,000,000+	9	6.87	7.04	15.57	13.66
500,000–999,999	10	8.67	5.47	17.71	13.58
200,000–499,999	54	8.83	5.30	16.32	13.16
100,000–199,999	74	10.24	3.49	16.58	15.36
Growth rate					
High	68	8.72	4.05	15.92	13.54
Medium	51	9.88	5.00	17.27	15.56
Low	26	10.31	4.84	17.02	14.04
Functional specialization					
Manufacturing	68	8.58	4.84	13.79	13.21
Trade and transport	58	9.61	3.65	17.75	15.77
Service	21	11.54	5.79	21.79	13.96
Length of existence as class I city					
Before 1901	25	8.05	7.23	16.69	13.79
1901–41	24	9.25	3.87	16.19	13.98
After 1941	87	10.03	4.19	16.53	15.22
New cities	10	7.53	2.24	16.54	9.00
Regional type					
Himalayan	6	10.38	7.69	17.34	15.05
Upper Ganga plains	24	8.53	4.34	16.02	16.13
Middle and lower Ganga plains	21	11.65	3.92	19.91	13.00
Central India plateau	27	8.71	4.86	14.63	11.37
Deccan plateau	35	9.03	5.17	15.97	14.66
Coastal plains	34	9.41	3.48	16.60	15.75

NOTES: Table excludes data on cultivators and agricultural laborers. Occupational divisions are defined as follows: 0–1, professional, technical, and related workers; 2, executive, managerial, administrative, and related workers; 3, clerical and related workers; 4, sales workers; 5, service workers; 6, farmers, fishers, loggers, hunters, and related workers;

greater proportion of urban migrants was found in tertiary sector activities. The differences, although not large for males, were all statistically significant except in the manufacturing sector. The differences were more pronounced for female migrant workers. The proportion of rural migrant workers in primary and secondary sectors was consistently higher than the proportion of urban workers in all three migration streams–intradistrict, interdistrict, and interstate. Similarly, workers by city characteristic and occupational division: India, 1971

		Occupational division (females)					
5	7–9	0–1	2	3	4	5	7–9
13.00	38.88	29.85	0.60	5.96	7.24	21.44	32.98
10.80	43.06	28.07	0.91	12.26	6.45	23.26	26.72
12.01	37.41	33.61	0.89	5.84	7.81	18.62	31.49
13.00	40.34	31.74	0.68	7.47	5.57	21.81	30.87
13.41	37.51	28.18	0.47	4.11	8.48	21.34	35.48
11.76	42.65	26.42	0.63	7.56	6.60	20.40	36.47
13.82	35.36	33.71	0.52	4.87	7.28	22.91	28.91
13.97	35.71	32.92	0.74	4.22	8.68	22.66	28.48
12.44	43.58	26.66	0.70	5.44	7.31	18.82	38.96
12.89	37.21	29.67	0.43	5.54	8.26	24.12	30.15
15.14	28.28	40.71	0.78	8.78	4.20	22.53	21.41
12.32	38.03	36.01	0.78	8.23	6.73	21.02	25.03
13.76	39.45	32.65	0.76	6.17	6.30	22.97	29.09
13.30	37.44	28.08	0.50	4.94	7.91	21.28	35.48
10.44	51.84	22.47	0.70	8.57	4.80	20.19	41.42
20.25	25.83	41.66	0.63	8.70	4.71	20.84	21.83
13.51	37.06	43.68	0.73	6.68	3.78	21.72	21.54
13.96	33.43	34.87	0.79	4.54	7.01	29.67	19.71
11.27	44.71	24.20	0.93	4.78	5.74	17.87	44.46
12.36	40.68	23.84	0.36	5.04	9.51	16.75	42.60
12.82	39.37	25.60	0.39	7.72	9.14	23.94	32.18

7–9, production process workers and workers not elsewhere classified; X, workers unclassifiable by occupation. Information on divisions 6 and X has been excluded owing to very small percentages in those categories.

urban migrant workers were found in greater proportion in the other services sector in all three migration streams.

Occupational distribution of migrant workers

The occupational distribution of male and female migrant workers other than cultivators and agricultural laborers (Table 18) shows that about three-tenths of the male migrant workers were engaged in white-collar occupations (divisions 0–3)[18] in the Indian cities in 1971. The proportion of production process workers–skilled, semiskilled, and unskilled–was about two-fifths, and a little more than one-fourth were sales and service workers. Of the female migrant workers, three-tenths were engaged in prestigious white-collar occupations–professional, technical, and related work (division 0–1). Clerks comprised 6 percent whereas sales workers accounted for 7.2 percent. The proportion of service workers among females was high (21.4 percent), since many migrant women, especially illiterates or those with little education, worked as domestic servants in the cities. Production process workers accounted for one-third of the migrant female workers.

Some interesting patterns emerge regarding the occupational distribution of male and female workers when examined according to city characteristics. There was little difference by city size when male workers in divisions 0–1, 2, and 3 were combined. Although the proportion in division 0–1 was somewhat lower in million-plus cities, it was higher in division 2. Male migrant workers in million-plus cities were considerably more numerous in division 7–9 (43.1 percent) than in cities in other size classes, but they were comparatively less so in division 5. This indicates that if a person is able to secure regular employment as a production process worker, he probably will not continue any longer as a service worker. Sales workers and service workers comprised the highest proportions in small-sized cities. No clearcut pattern emerged for female migrant workers when considered by city size.

Cities with high growth rates, manufacturing cities, comparatively new cities, and cities located in the central India plateau had significantly higher proportions of production process workers than other types of cities. As pointed out earlier, a certain amount of interaction occurs among the cities since some of the new cities located in the central India plateau specialize in manufacturing activities; these cities had higher growth rates as well during 1951–71.

The proportion of workers in white-collar occupations (divisions 0–1, 2, and 3) was highest in administrative and service cities. It was also high in cities of the middle and lower Ganga plains, although there is not much of a relationship between the region's cities and functional specialization.

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[18] We have excluded division 4–sales workers–from the white-collar work category because in India a large number of hawkers, vendors, and petty traders are included in the category of sales workers; they are not white-collar workers.

Similar variations are found when occupational distribution of female migrant workers (Table 18) is analyzed according to various city characteristics.

Occupational classification of migrant and nonmigrant workers

Since data on occupational classification of all workers (similar to data on migrant workers) are not available for each city from the 1971 census tables, it has not been possible to compare the occupational placement of migrant and nonmigrant workers of all 147 cities. However, a comparison has been made on the basis of data for 20 selected cities (Appendix 2). An analysis of the occupational distribution of migrant and nonmigrant workers (other than cultivators and agricultural laborers), for both males and females (Table 19), shows that a significantly higher proportion of migrants than of nonmigrants of both sexes was engaged in professional, technical, administrative, executive, and managerial jobs. The proportion of male migrant workers in clerical and related activities was also significantly higher than for nonmigrants. A significantly higher proportion of male migrants worked in service occupations than did nonmigrants, but the opposite was true for females. The proportion of nonmigrant workers of both sexes was, however, significantly higher in production process activities.

An analysis of data for the eight metropolises shows that among male workers a significantly higher proportion of migrants than of nonmigrants worked in prestigious white-collar jobs—professional, technical, administrative, executive, managerial, and related categories (divisions 0–2). Significantly more nonmigrants worked in the sales category; they also worked in greater proportions as production process workers, but the difference between nonmigrants and migrants was not significant. From this analysis it may be concluded that migrant workers possess higher levels of education and skills and are more frequently engaged in white-collar jobs than nonmigrants.

To gain a better understanding of the differentials in the occupational placement of migrant and nonmigrant workers, we compared the occupational distribution of male migrant and nonmigrant workers in the 20 cities by controlling for educational attainment. No significant differences were observed in their proportions in division 0–1 (professional, technical, and related workers) and division 3 (clerical and

TABLE 19. Percentage distributions of male and female migrant and nonmigrant workers by occupational division: 20 selected cities of India, 1971

	All 20 cities				8 metropolises			
	Males		Females		Males		Females	
Occupational divisions	Migrant	Nonmigrant	Migrant	Nonmigrant	Migrant	Nonmigrant	Migrant	Nonmigrant
0–1 Professional, technical, and related workers	8.82	5.87	37.36	25.36	7.17	5.32	28.58	24.75
2 Administrative, executive, managerial, and related workers	6.66	2.43	0.90	0.48	7.62	2.48	0.96	0.47
3 Clerical and related workers	17.94	13.44	8.66	8.50	15.88	14.49	12.59	13.41
4 Sales workers	13.06	16.54	6.13	8.32	13.44	17.13	6.73	8.98
5 Service workers	12.23	8.67	19.75	24.06	10.54	8.32	21.45	22.29
6 Farmers, fishers, hunters, loggers, and related workers	1.11	1.63	0.90	1.19	1.01	1.50	0.91	1.34
7–9 Craftspersons, production process workers, and laborers not elsewhere classified	37.59	49.37	25.33	30.36	42.54	48.92	27.43	27.56
X Workers not classifiable by occupation	2.58	2.05	0.98	1.72	1.78	1.84	1.34	1.21

related workers) for different levels of education. Migrant workers were, however, significantly more numerous in division 2 (executive, administrative, and managerial workers) and division 5 (service workers), but significantly larger proportions of the nonmigrants were found in division 4 (sales and other related workers). Since a large majority of sales workers in India are in the unorganized sector, it seems that nonmigrants form a large share of the urban informal sector. A significantly higher proportion of nonmigrant than of migrant male workers also were found in production process work (division 7–9) for different educational levels.

Our analysis contradicts the findings of Zachariah (1968) and Mitra et al. (1980) regarding the occupational placement of migrant and nonmigrant workers in Indian cities. The present data establish that migrants go to cities because of better job opportunities there and not because they are unwanted at their places of origin. It would be useful to carry out similar analyses from 1981 census migration data, although that would require special tabulations since the present tabulation plan does not envisage migration tables comparable to the 1971 census tables.

Summarizing the findings of the survey of the literature on internal migration in less developed countries, Yap (1975:3) concluded, "Over time, in fact, there seem to be few employment-related differences between migrants and non-migrants of the same sex, age, and educational levels in metropolitan areas." When we compare the occupational placement of migrant and nonmigrant workers after controlling for sex and education, our data lead to a similar conclusion.

EXAMINATION OF THE MODEL

The analysis of the pattern of inmigration to Indian cities with populations of 100,000 and more and the analysis of migrant characteristics have brought into focus certain differentials in the quantum of migration by city characteristics. We can now look for evidence to substantiate our schematic model of migration flow (Figure 1).

We recognize that all cities receive migrants through all the migration streams–intradistrict rural, intradistrict urban, interdistrict rural, interdistrict urban, interstate rural, and interstate urban–but it is the dominance of a stream that determines a city's classification into that particular stream. For example, if mean plus one standard deviation ($\bar{X} + \sigma$) of the proportion of lifetime migrants in a particular stream is

TABLE 20. Cities with high intradistrict migration and selected

City and functional specialization		% of lifetime migrants in total population	Current inmigration rate	Sex ratio of migrants	
				Lifetime	Current
1. Salem	(M)	21.4	1.40	88	125
2. Guntur	(M)	45.2	4.16	94	87
3. Tirunelveli	(T)	36.3	3.09	88	116
4. Mangalore	(M)	33.6	3.40	101	108
5. Warangal	(M)	28.2	2.20	86	146
6. Tuticorin	(T)	36.4	2.50	90	114
7. Gaya	(T)	28.6	1.45	93	134
8. Vellore	(T)	36.2	3.15	84	138
9. Kakinada	(T)	40.0	3.64	90	104
10. Alleppey	(M)	19.4	1.35	75	82
11. Tiruppur	(M)	42.3	2.52	92	106
12. Gulbarga	(T)	32.0	2.47	113	135
13. Nagercoil	(M)	27.9	2.29	82	101
14. Nellore	(T)	41.8	3.85	96	127
15. Darbhanga	(T)	26.4	1.91	94	226
16. Dindigul	(T)	32.2	2.53	91	94
17. Kumbhakonam	(T)	39.9	2.34	78	116
18. Berhampur	(S)	38.3	4.44	90	115
19. Machilipatnam	(M)	44.2	4.92	92	129
20. Jalgaon	(T)	32.8	2.98	94	124
21. Bijapur	(T)	38.8	2.32	103	129
22. Tenali	(T)	46.8	3.92	88	113
23. Monghyr	(M)	22.7	0.58	50	129
24. Cuddalore	(T)	39.7	4.23	78	119
25. Bihar	(M)	22.0	0.56	66	138
26. Imphal	(M)	12.8	0.79	121	180
Average		33.3	2.65	89	124

M—manufacturing.

T—trade, commerce, and transport.

S—service.

taken as the cutoff point to represent the dominance of that stream, then intradistrict migration was dominant in 26 cities (Table 20). Of those 26 cities, only five had 1971 populations between 200,000 and 499,999; the rest had populations between 100,000 and 200,000.

The average proportion of lifetime migrants (33.3 percent) in the populations of those cities was significantly lower than the average

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Literacy rate		% of migrants with high school and above qualifications		% of male workers in occupational division	
Both sexes	Males	Both sexes	Males	0–3	7–9
58.8	71.9	13.2	19.8	21.2	49.4
54.2	67.1	15.2	23.4	24.4	42.7
68.3	81.7	17.8	27.3	30.2	37.5
71.0	80.2	21.0	27.2	24.6	44.5
51.1	70.1	16.2	28.0	30.5	41.2
64.1	76.7	12.5	17.8	19.6	45.9
58.1	77.4	19.9	35.5	37.7	31.4
63.8	77.1	17.7	25.2	30.0	37.3
63.6	73.3	18.2	30.1	32.0	36.4
77.1	84.0	19.3	25.4	28.8	35.2
54.7	72.9	9.6	14.1	15.2	60.9
60.0	77.1	22.7	35.6	40.7	34.2
75.2	84.8	19.2	26.4	29.3	40.2
61.3	73.5	14.2	22.2	21.3	39.2
57.6	80.1	25.2	44.2	47.3	18.0
66.7	80.6	13.4	19.0	23.2	36.4
65.2	80.3	14.1	23.0	24.4	38.7
60.0	76.8	16.6	29.4	38.0	28.5
62.1	71.3	15.8	26.7	34.4	37.9
64.4	79.3	16.3	25.9	36.8	29.2
61.3	77.3	22.2	35.4	36.4	30.1
55.6	66.1	12.4	21.6	23.0	38.8
48.9	76.0	16.1	37.3	48.1	24.2
63.7	78.7	16.0	25.1	33.9	32.2
42.0	65.1	13.5	29.6	30.8	34.7
59.7	76.6	18.6	26.2	25.4	22.3
61.1	76.0	16.8	27.0	30.3	36.4

for all 147 cities (38.4 percent). Similarly, the sex ratio of 89 among lifetime migrants was significantly lower than the average for all cities. The sex ratio of current migrants (124) was also substantially lower than the average for all the cities.

Although we observe no significant differences in the literacy rates of migrants–total or males–to the 26 cities compared with the average

TABLE 21. Cities with high interdistrict migration and selected

City and functional specialization		% of lifetime migrants in total population	Current inmigration rate	Sex ratio of migrants	
				Lifetime	Current
1. Madras	(T)	19.0	1.96	122	127
2. Hyderabad	(T)	22.8	2.34	123	160
3. Ahmedabad	(M)	44.2	1.67	125	134
4. Kanpur	(M)	37.0	1.66	138	160
5. Lucknow	(S)	33.5	2.32	125	166
6. Madurai	(M)	35.1	2.10	99	108
7. Patna	(S)	32.8	1.16	118	156
8. Tiruchirapalli	(T)	39.2	2.51	96	123
9. Dhanbad	(T)	58.7	2.69	164	196
10. Vijayawada	(T)	51.1	3.30	103	115
11. Calicut	(T)	16.8	1.67	94	140
12. Bareilly	(T)	21.2	2.36	131	208
13. Ujjain	(M)	37.4	1.50	91	135
14. Thana	(M)	68.3	6.46	138	174
15. Malegaon	(M)	34.4	1.14	106	141
16. Rampur	(M)	10.2	0.40	155	73
17. Shahjahanpur	(T)	20.7	0.17	83	233
18. Firozabad	(M)	34.9	0.73	77	128
19. Eluru	(M)	41.4	3.48	85	103
20. Devangere	(M)	40.8	2.12	111	135
21. Kanchipuram	(M)	33.2	2.35	72	119
22. Farrukhabad	(M)	30.2	1.66	71	167
23. Faizabad	(S)	31.4	0.90	101	230
24. Bhubaneshwar	(S)	67.1	7.77	143	195
25. Shimoga	(T)	49.6	5.05	118	152
26. Bhadravati	(M)	50.2	2.30	109	89
27. Bokaro	(M)	63.2	5.95	145	225
Average		37.9	2.51	114	152

M—manufacturing.
T—trade, commerce, and transport.
S—service.

for the 147 cities, the proportion of persons with high school or higher educational attainment was significantly lower. No significant differences are observed in employment patterns of male workers in the 26 cities compared with patterns in the 147 cities.

From the viewpoint of functional specialization, 14 cities have been classified as trade, commerce, and transport cities and 11 as manufac-

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Literacy rate		% of migrants with high school and above qualifications		% of male workers in occupational division	
Both sexes	Males	Both sexes	Males	0–3	7–9
70.4	81.1	24.7	33.5	30.9	40.4
65.1	75.6	28.6	39.0	49.1	27.8
62.5	72.4	19.6	26.2	18.7	56.4
57.9	67.8	21.7	29.3	26.8	47.7
65.1	73.4	30.2	39.2	38.1	30.4
65.6	81.3	16.1	23.1	23.9	43.3
65.2	78.5	29.7	44.0	47.1	22.0
71.4	80.6	19.8	28.9	25.4	40.8
46.0	54.1	14.5	19.2	16.7	66.5
60.9	70.5	15.6	24.8	25.3	44.0
72.6	80.1	22.4	27.8	33.5	34.1
65.7	75.7	28.3	39.1	40.3	26.2
59.3	74.9	18.8	28.4	32.9	46.8
66.9	74.4	19.8	23.9	23.2	55.0
44.6	59.7	5.1	8.0	10.2	64.7
64.0	75.1	26.9	34.7	29.5	36.4
51.6	70.4	18.5	31.7	28.4	42.1
42.4	52.9	9.9	15.1	11.5	66.1
58.6	67.0	13.0	21.5	26.5	43.1
57.0	70.1	17.2	26.9	19.7	51.7
58.2	77.6	12.4	21.7	28.0	42.0
49.1	68.6	16.0	28.4	34.0	28.3
55.2	76.2	21.7	36.2	44.3	21.7
72.7	82.4	28.2	40.2	53.1	20.2
63.5	71.4	21.6	29.7	28.0	36.6
53.6	65.7	14.4	21.4	15.1	63.3
47.4	63.4	16.3	23.2	17.4	61.7
59.7	71.9	19.7	28.3	28.8	42.9

turing cities. Most of those cities are district headquarters. The manufacturing and trade in almost all of them have been of local importance, basically serving their own populations and immediate regions.

In 27 cities interdistrict migration was higher than 52.4 percent ($\overline{X} + \sigma$) and thus established the dominance of this particular stream (Table 21). We call them group 2 cities in contrast to cities with high intradistrict migration, which we term group 1 cities. An examination of the proportion of migrants from rural and urban areas of other districts of the same state indicates that the two streams were almost equally strong. However, in seven cities–Ahmedabad, Kanpur, Lucknow, Dhanbad, Calicut, Firozabad, and Bokaro–the proportion of interdistrict rural migrants was more than 36.7 percent (that is, even greater than $\overline{X} + 2\sigma$ for the rural interdistrict stream). As all seven cities are of regional and national importance, we did not expect them to conform to the intradistrict migrant stream. Although five group 2 cities had very strong urban interdistrict migration streams, the other cities in group 2 also had fairly strong urban streams. We have, therefore, analyzed all 27 cities together.

The proportion of lifetime migrants (37.9 percent) in the 27 cities of group 2 (Table 21) was somewhat higher than in group 1's 26 cities. The sex ratios of lifetime and current migrants were substantially higher in group 2 cities than in group 1 cities. The literacy rates among migrants in both groups were similar, but the proportion of persons with high school and above qualifications was somewhat higher in group 2 cities. In contrast to our expectations, the proportion of male workers in white-collar jobs was lower in group 2 cities than in group 1 cities but their proportion in production process activities was much higher.

Of the 27 cities in group 2, 14 are manufacturing cities, nine are trade, commerce, and transport cities, and the remaining four are service cities. Among the service cities Lucknow, Patna, and Bhubaneshwar are state capitals of Uttar Pradesh, Bihar, and Orissa, respectively. Manufacturing cities and trade, commerce, and transport cities in group 2 have been primarily of regional and national importance. Some group 2 cities, however, are basically of local importance.

The above analysis indicates that in contrast to cities with high intradistrict migration, cities with higher interdistrict migration in 1971 had larger proportions of lifetime migrants, higher sex ratios among both lifetime and current migrants, and somewhat higher educational levels. Although the proportion of male migrant workers in white-collar occupations (divisions 0–3) was low, those cities had significantly more male migrant workers in production process activities. The majority of the cities in this category were of regional and national importance.

In 24 cities the proportion of interstate migrants to total migrants was high (Table 22). Six of those cities–Sholapur, Jhansi, Bellary, Kolar Gold Fields, Burhanpur, and Ambala Cantonment–had high interstate migration basically because of being located near state boundaries; otherwise they largely resembled the cities of group 1 and were mainly of local or regional importance. We have therefore excluded the six cities from our discussion of characteristics of cities with high interstate migration.

Among the 18 cities with a high proportion of interstate migrants, the rural component was very high in four cities–Greater Bombay, Durg-Bhilainagar, Asansol, and Rourkela. In contrast, Delhi, Chandigarh, and Pondicherry (all of which are union territories and capital cities) had very high proportions of urban interstate migrants.

All three cities with very high urban interstate migration had a much larger proportion of migrants of both sexes with high school or higher education than did other cities. The proportion of male migrant workers in white-collar jobs was highest in those cities. In contrast, the sex ratios among the migrants–lifetime and current–were not the highest but were quite moderate. Those cities, therefore, roughly conformed to the fourth category of our schematic model.

An analysis of the migration pattern to 18 cities of group 3 (Table 22) indicates that they had the largest proportion of lifetime migrants. They also had higher current inmigration rates, although the difference was not statistically significant. The sex ratios of both lifetime and current migrants to the 18 cities were higher than in cities of groups 1 and 2. Although the literacy rates of both total and male migrants to group 3 cities were of the same magnitude as those to groups 1 and 2 cities, the proportion of migrants with high school or higher education was significantly higher, especially compared with group 1 cities.

Finally, the proportion of male migrants in white-collar occupations (divisions 0–3) was somewhat lower in those cities but their proportion in blue-collar occupations (division 7–9) was significantly higher than in group 1 cities.

Ten cities in this group specialize in manufacturing, and almost all are of national or regional importance. Further, the five cities with trade, commerce, or transportation functions are of national importance in the Indian economy. Four of the five cities–Calcutta, Dhanbad, Asansol, and Kharagpur–have manufacturing functions next in importance to trade and commerce. Among the service cities, Delhi

TABLE 22. Cities with high interstate migration and selected

City and functional specialization		% of lifetime migrants in total population	Current inmigration rate	Sex ratio of migrants	
				Lifetime	Current
1. Calcutta	(T)	32.4	0.85	189	176
2. Greater Bombay	(M)	56.9	1.87	168	139
3. Delhi	(S)	51.7	3.38	132	149
4. Hyderabad	(T)	22.8	2.34	123	160
5. Bangalore	(M)	37.7	2.42	126	169
6. Indore	(M)	37.9	1.63	107	135
7. Jabalpur	(M)	40.2	3.54	126	267
8. Surat	(M)	32.3	2.12	122	162
9. Jamshedpur	(M)	47.1	2.19	131	180
10. Dhanbad	(T)	58.7	2.69	164	196
11. Gwalior	(M)	31.4	1.71	101	188
12. Bhopal	(S)	49.0	3.62	125	162
13. Durg-Bhilainagar	(M)	69.1	3.52	122	122
14. Asansol	(T)	30.5	0.49	156	130
15. Kharagpur	(T)	37.7	0.77	112	92
16. Chandigarh	(S)	79.4	8.64	136	138
17. Rourkela	(M)	71.3	5.27	143	133
18. Pondicherry	(M)	31.8	1.98	79	106
Average		45.4	2.72	131	156
Cities with high interstate migration due to location near a state boundary					
1. Sholapur	(M)	29.5	1.02	94	123
2. Jhansi	(T)	35.8	3.35	78	91
3. Bellary	(T)	28.8	2.06	107	137
4. Kolar Gold Fields	(M)	27.3	1.56	97	120
5. Burhanpur	(M)	24.6	1.41	79	148
6. Ambala Cantonment	(S)	51.2	7.53	95	112
Average		32.9	2.82	92	122
Overall average		42.3	2.75	121	147

M—manufacturing.
T—trade, commerce, and transport.
S—service.

is the national capital and Chandigarh and Pondicherry are also capital cities; Chandigarh has the unique distinction of being the capital of two states (Haryana and Punjab) and the capital of the union territory.

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Literacy rate		% of migrants with high school and above qualifications		% of male workers in occupational division	
Both sexes	Males	Both sexes	Males	0–3	7–9
58.5	62.8	21.2	25.6	20.0	47.2
66.0	72.9	17.8	20.7	22.1	49.2
64.6	73.3	29.1	35.8	32.7	36.6
65.1	75.6	28.6	39.0	49.1	27.8
67.2	76.8	29.4	38.0	29.5	41.9
61.2	72.9	20.2	27.6	31.6	45.0
65.1	76.1	28.8	39.4	26.7	40.1
59.9	68.6	15.7	20.2	15.4	62.9
62.3	74.2	22.6	32.3	19.3	58.0
46.0	54.1	14.5	19.2	16.7	66.5
60.4	77.6	24.1	35.4	33.4	37.7
65.2	76.0	29.5	39.4	36.6	37.5
59.1	71.5	20.6	26.2	22.3	59.9
61.7	69.7	22.5	29.8	17.8	56.3
70.4	83.5	25.3	40.1	33.2	49.4
71.1	76.8	38.5	45.7	45.6	26.4
63.9	74.0	20.6	28.3	21.6	52.5
63.4	78.6	16.0	24.3	29.2	42.4
62.2	73.1	23.6	31.5	27.9	46.5
51.6	68.6	13.0	20.5	22.4	52.8
63.3	75.6	22.6	34.2	34.6	36.2
59.6	72.5	19.3	30.0	32.8	37.1
60.7	73.0	16.9	24.9	18.4	59.8
52.4	69.3	11.1	18.0	24.6	45.2
57.0	65.9	17.5	22.5	28.6	40.4
57.4	70.8	16.7	25.0	26.9	45.2
61.5	72.5	21.9	29.9	27.7	46.2

From the above analysis we conclude that our schematic model generally holds well for migrant characteristics according to dominant migration stream. It would be useful, however, to replicate this analysis with data from other countries or with the 1981 census data from India. Such analysis would help in formulating migration policies for the future.

MULTIPLE CLASSIFICATION AND MULTIPLE REGRESSION ANALYSIS OF THE VOLUME OF CITYWARD MIGRATION

To study the interrelationships among the industrial structure of the male working population of class I cities in India, the inflow of migrants into the cities during 1961–71, and the relative concentration of capital investments in those cities, Mitra et al. (1980) considered (1) distribution of male workers according to industrial classification, (2) distribution of migrants according to educational level, (3) capital investment in the organized sector of industries during 1970, and (4) the sum of all workers employed in registered industrial establishments in the organized industrial sector of each city during 1970–71 (Mitra et al., 1980:4).

We think, however, that migration to cities can be explained largely by characteristics of the cities themselves, such as their size, growth rate, functional specialization, length of existence as a class I city, and regional location. Certain other variables also may influence migration flows to class I cities–e.g., public and private capital investment over time and a city's importance in the national, regional, or local economy. With great difficulty Mitra et al. obtained 1970 data on capital investment for industrial units covered by the Annual Survey of Industries (Mitra et al., 1980:vi). But in addition to investment in organized industry, we believe that the central, state, and local governments make substantial investments in the development of infrastructural facilities in various cities, and that people make substantial investments in housing and industry. The growth rates of the cities and the volume of migration are influenced by the overall investment, which is spread over several years. We wanted to include these data as explanatory variables but could not because they were unavailable. Nor could we use, as a surrogate, electric consumption or the number of telephones per 1,000 residents in each city because those data also were not available at the city level. Similarly, data necessary to classify the cities according to their importance in the national, regional, or local economy were not readily available. Hence, we limit our analysis of migration flow to the cities by utilizing five classificatory variables–

city size, growth rate, functional specialization, length of existence as a class I city, and regional location—as explanatory variables.

Multiple classification analysis

For the multiple classification analysis, we have taken as dependent variables the proportion of lifetime migration and inmigration rates, both for total, males, and females. Table 23 gives the F-ratios for each of the five explanatory variables and the total amount of variance explained by them.[19] For lifetime migrants (total, males, and females) city size and functional specialization proved not to be important explanatory variables because the F-ratios are not significant. The growth rates of the cities, length of existence in class I, and regional location, however, were important determinants of migration flow. For inmigration rates (total, males, and females) functional specialization, along with the above three variables, also was an important determinant.

The five variables together explain about two-fifths of the variance in the dependent variables, the predictability being somewhat more for lifetime male inmigrants than lifetime female inmigrants, but with current inmigration rates the opposite holds true. Other variables, if identified and taken into account, would improve the explanatory power of the model.

Multiple regression analysis

Besides considering city characteristics as explanatory variables of migration flow, we believed that the quantum of lifetime migration in each city's population and the current inmigration rates were also related to the predominant migration stream and certain migrant characteristics. With this in mind we selected a set of variables to analyze the correlations between proportion of lifetime migrants (total, male, female), and current inmigration rates on the one hand, and the following variables on the other. Expecting that some of these variables would also form an explanatory system of both the proportion of lifetime migrants and current inmigration rates, we then developed a set of regression equations.

For the correlation analysis, we first took the size of the various male and female migration streams—rural, urban, intradistrict,

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[19] For this purpose a multiple classification analysis technique has been used. The program was developed at the University of Michigan and revised somewhat at the East-West Center by Modecki (1975).

TABLE 23. F-ratios of explanatory variables used in the analysis of variance and the amounts of variance explained by the explanatory variables when adjusted for degrees of freedom

	Explanatory variables					
Dependent variables	City size	Growth rate	Functional specialization	Length of existence as class I city	Regional location	Adjusted R^2 (%)
Lifetime inmigrants in total population	1.11	15.59**	0.63	18.50**	3.00*	41.0
Lifetime male inmigrants in male population	1.53	20.41**	0.94	17.43**	3.10**	45.1
Lifetime female inmigrants in female population	1.58	9.74**	0.36	19.07**	2.74*	35.5
Inmigration rate, total	1.74	4.46*	8.16**	4.30**	9.95**	39.2
Inmigration rate, male	1.42	3.92*	8.20**	3.17*	9.01**	34.2
Inmigration rate, female	1.86	4.84**	7.08**	5.68**	9.91**	41.4

*—significant at 5 percent level.

**—significant at 1 percent level.

interdistrict, interstate, and immigrant. They resulted in 12 variables (Appendix 4:V7–V18).

The second group of variables (V19–V22) comprised the characteristics of the lifetime migrants and their proportions in the age groups 15–29 and 30–59 separately for males and females.

Next we considered female marital status as a determinant of total migration flow since a major reason for female migration is marriage migration. Hence, two variables (V23 and V24) were included that relate to percentage of unmarried and married females among lifetime female migrants.

The next 14 variables for correlation analysis (V25–V38) included the proportion literate among male and female migrants and among migrant workers, and also the proportion of migrants with at least a high school education (10 years of schooling) or graduate and above qualifications among male and female lifetime migrants and migrant workers.

As explanatory variables of migration flows, we decided on a set of variables relating to work participation rates of male and female lifetime migrants and industrial and occupational placement of migrant workers separately by sex. We also considered the broad industrial classification of total workers in each city, on the assumption that this classification determines the functional specialization of the cities. These variables are numbered V39–V54.

As expected, not all the selected variables had significant correlations with the dependent variables. Table 24 shows the zero-order correlations of the six dependent variables with those explanatory variables that did have some statistically significant value with one or more of the dependent variables.

The proportion of rural or urban migrants among total migrants of either sex did not have any correlation with lifetime migrants. Instead, the proportion of male migrants from rural areas had a negative correlation with current inmigration rates, but the proportion of male migrants from urban areas had strong positive correlations with all three inmigration rates. One may anticipate from these findings that migration to cities from other urban areas and among themselves probably will play a more important role in future population redistribution in the cities than will migration from rural areas, a hypothesis we posed earlier.

Intradistrict migration streams of both male and female migrants had negative correlations with total and male lifetime migrant streams; but interstate migration streams of both sexes had positive and significant correlations with all six dependent variables, pointing toward a long-distance pull on both rural and urban migrants. It is likely that these people, having once arrived in a particular city after incurring huge costs, do not generally move to other places.

As expected, the proportion of male and female migrants between ages 15 and 29 (V19 and V21) had significant positive correlations with almost all six dependent variables, whereas the proportion of older adults of both sexes (V20 and V22) had negative correlations with the dependent variables, implying youthfulness of the migrants.

The proportion of unmarried females among lifetime female migrants (V23) had strong positive correlations with the six dependent

TABLE 24. Explanatory variables having significant correlations with dependent variables

Explanatory variables	Dependent variables: % of migrants among total population			Inmigration rate		
	Both sexes	Male	Female	Both sexes	Male	Female
7. % of rural migrants among male migrants				−0.208**	−0.210**	−0.193*
8. % of urban migrants among male migrants				0.225**	0.231**	0.208**
9. % of intradistrict migrants among male migrants	−0.196*	−0.265**				
10. % of interdistrict migrants among male migrants						−0.186*
11. % of interstate migrants among male migrants	0.276**	0.328**	0.198*	0.188*	0.184*	0.186*
14. % of urban migrants among female migrants					0.163*	
15. % of intradistrict migrants among female migrants	−0.246**	−0.310**				
16. % of interdistrict migrants among female migrants				−0.160*		−0.206**
17. % of interstate migrants among female migrants	0.287**	0.323**	0.229**	0.208**	0.188*	0.230**
18. % of immigrants among female migrants		0.174*				
19. % of male migrants, ages 15–29	0.173*	0.237**		0.270**	0.336**	0.164*
20. % of male migrants, ages 30–59	−0.207**	−0.180*	−0.236**	−0.406**	−0.436**	−0.353**
21. % of female migrants, ages 15–29	0.329**	0.357**	0.281**	0.297**	0.292**	0.291**
22. % of female migrants, ages 30–59	−0.518**	−0.552**	−0.452**	−0.502**	−0.484**	−0.506**

23. % unmarried among lifetime female migrants	0.416**	0.474**	0.319**	0.490**	0.458**	0.516**
24. % married among lifetime female migrants	-0.257**	-0.293**	-0.194*	-0.343**	-0.312**	-0.377**
27. % literate among female lifetime migrants		0.166*		0.182*	0.166*	0.200*
28. % literate among female migrant workers			-0.164*			
33. % of high school and above among female migrants				0.199*	0.205*	0.183*
34. % of graduates and above among female migrants				0.201*	0.211**	0.177*
36. % of graduates and above among female migrant workers					0.160*	
37. % with high school diploma and above among male migrants, ages 15–29	-0.170*	-0.171*				
38. % with high school diploma and above among female migrants, ages 15–29				0.209**	0.214**	0.196*
39. Work participation rate of male migrants		0.201*				
41. Work participation rate of male migrants, ages 15–29	0.273**	0.309**	0.216**	0.303**	0.294**	0.291**
42. Work participation rate of female migrants, ages 15–29				0.190*	0.176*	0.203*
43. % of male migrant workers in divisions 0–2	-0.210**	-0.201*	-0.209**		0.163*	
44. % of male migrant workers in division 5	-0.406**	-0.380**	-0.423**			
45. % of male migrant workers in divisions 7–9	0.346**	0.349**	0.325**			
46. % of female migrant workers in divisions 0–2	-0.211**	-0.190*	-0.227**			
47. % of female migrant workers in division 5				-0.162*	-0.163*	
48. % of female migrant workers in divisions 7–9	0.172*		0.192*			
49. % of total workers in secondary sector				-0.206**	-0.204*	-0.197*

TABLE 24. *(continued)*

Explanatory variables	Dependent variables					
	% of migrants among total population			Inmigration rate		
	Both sexes	Male	Female	Both sexes	Male	Female
51. % of total workers in other services sector				0.335**	0.359**	0.283**
52. % of male migrant workers in secondary sector	0.315**	0.328**	0.285**			
54. % of male migrant workers in other services sector	-0.283**	-0.279**	-0.272**			

variables while the proportion of married female migrants (V24) had the opposite relationship. This finding was contrary to our assumption that a large part of female migration would be due to marriage exogamy. It seems that family migration or associational migration has played an important role in the migration process in recent years because the possibility of employment migration of single unmarried females continues to be low in India. This relationship needs further probing.

Among the variables relating to migrant literacy and educational levels, only the ones related to females have shown any significant correlations with the dependent variables; that finding, coupled with current inmigration rates, implies that educational background is not an important determinant of the proportion of lifetime migrants in the cities. The positive correlations between the proportions of female migrants with different levels of education and current inmigration rates imply greater mobility of educated females, which is likely to increase in time.

Although the work participation rates (WPRs) of total, male, and female migrants proved to be unimportant in relation to the proportion of lifetime migrants or to inmigration rates, the WPRs of young males 15–29 years old had significant positive correlations with the six dependent variables. But the WPRs of female migrants in this age group were correlated only with current inmigration rates. One may therefore say that the volume of migration of young adults to the cities has been greatly influenced by the job opportunities there.

The percentage of male migrant workers in the secondary sector (V52) had strong positive correlations with the proportion of total, male, and female lifetime migrants but no relationship to inmigration rates. In contrast, the percentage of total workers in the secondary sector (V49) had no correlations with the proportion of lifetime migrants but had negative correlations with inmigration rates. Similarly, the proportion of production process workers among male migrants (V45) had positive correlations with the proportions of total, male, and female lifetime migrants. The percentage of total workers in the other services sector (V51) had strong positive correlations with inmigration rates but no correlations with the proportion of lifetime migrants; the percentage of male migrant workers in the other services sector (V54) had strong negative correlations with the proportion of lifetime migrants and no correlations with inmigration rates. Moreover, the percentage of male migrant workers in prestigious white-collar jobs (divisions 0–2) (V43) had negative correlations with the proportion of lifetime migrants but positive correlations with inmigration rates. From these results one may conclude that, in the past, industrial employment was a strong motivating force for migration but in recent years increasing white-collar employment opportunities for both males and females have attracted young migrants with some education. These opportunities are likely to increase further with economic development.

We next proceeded to develop a set of regression equations[20] by using the explanatory variables that helped to explain the variations in the proportions of total, male, and female lifetime migrants in the cities' populations and in the inmigration rates. We used a stepwise regression model to obtain these equations; the process was limited to ten steps because we thought that inclusion of any variable beyond that point would produce only a marginal improvement in adjusted R^2 and might even reduce it in some cases because of the loss of degrees of freedom with the inclusion of each additional variable. We also decided that if any variable entered at an earlier step became redundant after the addition of a new variable, it should be dropped from the regression equation to minimize the multicolinearity effect.

Six dependent variables, three relating to the proportion of lifetime migrants in the total, male, and female populations of each city and the other three relating to total, male, and female inmigration rates, generated six regression equations (Table 25). They explained roughly 53 to 62 percent of the variance in the dependent variables. The variables most frequently appearing in the regression equations were percentage of female migrants of ages 30–59 (V22), percentage of total workers in the other services sector (V51), and percentage of male migrant workers in the other services sector (V54), all of which appeared in five of the six equations. Beta coefficients of the variable

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[20] To develop the regression equations, an additive model of the type

$$Y = a_0 + a_1 X_1 + a_2 X_2 + \ldots + a_k X_k + E$$

has been assumed to operate where a_0 is a constant, and $a_1, a_2, \ldots, a_k$ are the partial regression coefficients (or Beta coefficients) of the explanatory variables $X_1, X_2, \ldots, X_k$; E is the random variation in the dependent variable Y. In the regression equations we used only those explanatory variables that had some significant (zero-order) correlation ($r = 0.159$ or better) with at least one of the dependent variables.

TABLE 25. Regression equations between dependent and explanatory variables with the value of adjusted R^2

	Equations					
Explanatory variables	(1) beta	(2) beta	(3) beta	(4) beta	(5) beta	(6) beta
Intercept	68.348	63.748	-29.589	10.162	9.148	1.254
% of migrants, ages 30–59, among lifetime female migrants (V22)	-1.379	-1.596	-0.716	-0.084	-0.061	
% of total workers in other services sector (V51)	1.249	1.248	1.187		-0.089	0.123
% of male migrant workers in other services sector (V54)	-0.948	-1.009	-0.852		-0.053	-0.054
% of interdistrict migrants among female migrants (V16)			-0.081	-0.020	-0.058	-0.075
Work participation rate of male migrants, ages 15–29 (V41)				0.084	0.091	0.054
% of male migrant workers in division 5 (V44)	-0.468	-0.326	-0.544			
% married among lifetime female migrants (V24)	0.460	0.403	1.253			
% in age group 30–59 among lifetime male migrants (V20)				-0.145	-0.183	-0.069
% of interdistrict migrants among male migrants (V10)					0.045	0.060
% with high school diploma and above among female migrants (V33)			-0.880			-0.087
% of total workers in secondary sector (V49)				-0.095	-0.052	
% unmarried among lifetime female migrants (V23)			1.321			0.118

TABLE 25. *(continued)*

	Equations					
Explanatory variables	(1) beta	(2) beta	(3) beta	(4) beta	(5) beta	(6) beta
% from rural areas among male migrants (V7)		0.185				
% of interstate migrants among female migrants (V17)		0.090				
% of immigrants among female migrants (V18)		0.259				
% literate among lifetime male migrants (V25)						-0.042
% with high school diploma and above among male migrants, ages 15–29 (V37)						0.023
% of male migrant workers in divisions 0–2 (V43)	-0.173					
% of male migrant workers in secondary sector (V52)				0.029		
% of variance explained (adjusted R^2)	56.6	61.5	52.9	58.2	62.3	59.7

percentage of female migrants 30–59 years old (V22) were negative in all the equations, indicating that cities have little attraction for older female migrants. Their proportion was high only in those cities that had a low proportion of migrants in their populations and low inmigration rates. Those cities probably have weak economic bases.

Although the percentage of total workers in the other services sector (V51) had positive Beta coefficients with explained variables, the proportion of male migrant workers in other services (V54) had negative Beta coefficients. It seems that an increase in total employment in other services leads to greater migration, but it is not male migrants who necessarily get those jobs.

The percentage of male migrant workers in services (V44)–occupational division 5–had negative Beta coefficients in the three equations relating to lifetime migrants. This finding reinforced the result of variable V54 and indicated also that employment of migrant males in low-grade services was high only in those cities where lifetime migration was low and was low where lifetime migration was high.

Beta coefficients of the percentage of married females among lifetime female migrants (V24) were positive in the first three regression equations relating to lifetime migrants. We showed earlier that this variable had strong negative zero-order correlations with all six explained variables. The present result means that when the influence of certain intervening variables is controlled, the direction and magnitude of influence of a particular variable can change. The present result means also that more migration of married females to cities should result in a greater proportion of female and total lifetime migration. Since some migration of married females is associational (moving with the principal breadwinner), a higher proportion of female migration also means more male lifetime migration.

Work participation rates of male migrants 15–29 years old (V41) had positive Beta coefficients with all three inmigration rates; that is, cities that provided greater employment opportunities to young male migrants also attracted a higher proportion of migrants during 1970–71. The negative Beta coefficients of percentage of male migrants 30–59 (V20) with inmigration rates were in order, as the latter variables generally reflect the migration of young adults.

Several other variables appeared in the six equations only once or twice. Their contribution in explaining the variance in the dependent variables was different in different equations.

SUMMARY

Our analysis has concentrated on the patterns of lifetime migration to Indian cities with populations of 100,000 and more when classified according to city size, growth rate, functional specialization, length of existence as a class I city, and regional location. It indicates that city size is not an important determinant of the proportion of migrants in their populations. As more cities obtain class I status, they are likely to have higher proportions of inmigrants in their populations. In contrast, the proportion of inmigrants in the populations of older cities is likely to become smaller in the future because a major part of their growth is likely to result from natural increase and from expansion of municipal boundaries.

Some newer cities of the central India plateau had very fast growth rates during 1951–71 because of heavy inmigration. In contrast, cities of the middle and lower Ganga plains had very low growth rates and low inmigration rates.

Our data indicate that inmigration to cities in the urban-to-urban stream is soon likely to become more dominant, especially in the administrative and service cities, where available job opportunities require people with higher education.

An analysis of sex ratios in migrant and nonmigrant populations shows that those were higher among nonmigrants than among migrants. In fact, the sex ratios of nonmigrants increased with age up to about age 40, indicating marriage migration of females from the cities. In contrast, ratios decreased among migrants of ages 20 and above because of inmigration by females in marriage and associational migration with the family breadwinner.

The sex ratio of 138 among lifetime migrants to metropolitan cities was very favorable to males, indicating male-selective inmigration; but the ratio was below 100 in cities in the lowest size class and was 100 in cities of the coastal plains.

The sex ratio among the current migrants was much higher than that of nonmigrants, indicating that initially migration is male selective. This selectivity probably occurs because many males are unmarried at the time of migration but marry later when they feel established. It is also possible that in an effort to secure better jobs, males move alone from one city to another, then are joined later by family members.

A lower sex ratio among urban inmigrants than among rural inmigrants suggests a greater proportion of family migration among the former and higher city-to-city migration of females through marriage.

More than half of the nonmigrant populations in the cities were children below the age of 15, whereas the proportion of children among lifetime migrants was less than one-fifth. Further, the proportion of children was higher among urban lifetime migrants than among rural lifetime migrants.

Our data indicate that migrants had a higher literacy rate than nonmigrants, probably because of age-structure variations in the two subpopulations. The proportion of literates and of those with at least a high school education (ten years of schooling) was significantly lower among intradistrict inmigrants than among interdistrict or interstate inmigrants. This finding implies that illiterate migrants generally travel short distances because (1) they are poor and cannot afford to go to distant places, (2) they do not receive proper information about job opportunities in distant places, and (3) they believe that, as unskilled workers, they are not likely to earn higher wages in a distant city than what they might earn in a nearby town or city.

A comparison of the educational attainment of migrant and nonmigrant workers in the 20 selected cities shows that proportionately more migrant workers possessed higher educational qualifications (high school and above) than did nonmigrant workers.

The work participation rate of male migrants to the cities, especially in the 15–29 age group, was significantly higher than that of nonmigrants. Migrant workers exceeded nonmigrant workers in absolute number by four to three; the excess in the age group 30–59 being in the ratio of eight to five. Hence, the function specialization of many cities has depended largely on the nature of activities pursued by the migrants. This was especially so in cities with high growth rates, those with administration or service as their functional specialization, those situated in the Himalayan region, or those that were new. Moreover, a larger proportion of migrant workers than of nonmigrants was engaged in the tertiary sector.

As for the occupational placement of migrant and nonmigrant workers, we observed that in the 20 selected cities proportionately more migrants than nonmigrants were employed in white-collar jobs. Conversely, nonmigrants were employed in greater proportion in production process occupations (divisions 7–9) and in sales and related occupations (division 4). As a large majority of sales workers in India are in the unorganized sector, it seems to us that nonmigrants form a greater share of the urban informal sector than do migrants. Therefore, we conclude that migrant workers to Indian cities possess higher levels of education and skills and are more frequently engaged in white-collar jobs than are nonmigrants.

We identified 26 cities with high intradistrict migration rates. Most of these cities are located in Tamil Nadu, Andhra Pradesh, and Bihar. The proportion of lifetime migrants (33.3 percent) in the 26 cities was significantly lower than the average for all 147 cities. Similarly, the sex ratio of 89 among lifetime migrants was significantly lower than the average for all cities. Although we observed no significant difference between the average literacy rate for the 26 cities and the average rate for all cities, the proportion of persons with high school or higher education was significantly lower. Most of the 26 cities were of local importance in the Indian economy, serving their own populations and immediate hinterlands.

In contrast, 24 cities had high proportions of interstate migrants in their populations. They were generally large cities (five of them were metropolises), and they had much larger proportions of inmigrants in their populations than did other cities. The sex ratio of lifetime migrants was well above the average for all cities. The proportion of migrants with high school and higher education was significantly greater in those cities than in others that had high intradistrict migration. Most of the cities in this category are of regional and national importance in the Indian economy. Among them Delhi is the national capital and seven others–Bombay, Calcutta, Hyderabad, Bangalore, Bhopal, Chandigarh, and Pondicherry–are state or union territory capitals.

We thought that migration to cities could be explained largely by characteristics of the cities themselves, such as their size, growth rate, functional specialization, length of existence as a class I city, and regional location. Certain other variables that may also influence migration flows to class I cities–e.g., public and private capital investment over time, and a city's importance in the national, regional, or local economy–could not be included as explanatory variables since relevant data were not available. The multiple classification analysis showed that such city characteristics as growth rate, length of existence as a class I city, location within the country, and, to some extent, functional specialization, are important determinants of the proportion of lifetime migrants in cities' populations and of current inmigration rates. In fact, these variables, along with city size categories, explain about two-fifths of the variation in the explained variables.

We also employed stepwise regression analysis using as explanatory variables the pattern of migration to each city (reflected by the proportion of migrants in various migration streams) and certain migration characteristics to explain the variation in the proportion of lifetime migrants in each city's population and the inmigration rate (total, males, and females). The analysis has shown that of 48 variables only 19 are more significant, eight of them appearing most frequently in the regression equations. The variables entering in the regression equations explained about three-fifths of the variance of the dependent variables. If the variables relating to city characteristics, migration patterns, and migrant characteristics were used together to explain the migration flow to class I cities, we would expect the explanatory power of the model to improve greatly.

We also believe that if similar exercises were performed with data from the 1981 Indian census or with migration data from other developing countries, they would shed further light on the role of primate, metropolitan, and intermediate cities in population redistribution through migration.

INDIAN URBAN DEVELOPMENT POLICIES AND MIGRATION

Soon after Independence in 1947, the Government of India launched a program of economic and social development through the five-year plans. The First Five-Year Plan (1951–56) stressed the development of agriculture and the exploitation of minerals and other resources. The concepts of community development and national extension service were introduced to take developmental strategies to the rural areas. New industrial complexes such as Bhilai, Chittaranjan, Durgapur, and Rourkela were developed during the 1950s in the mineral-rich Chhota Nagpur plateau and other regions to promote the growth of metal, engineering, and allied industries. New state capitals–Bhubaneshwar, Chandigarh, and Gandhinagar–were built during the same period.

During the Second Five-Year Plan, a central scheme was initiated to provide financial assistance to state governments and local bodies, enabling them to clear some of the worst slums in big cities. By the end of the plan, 208 projects in various towns and cities were initiated, costing about Rs 190 million and resulting in the relocation of about 58,200 families who had been living in slums (Planning Commission, 1961:687).

As an urban planning objective, the Third Five-Year Plan stressed balanced development among large, medium-sized, and small industries and between rural and urban areas. To achieve this, the plan suggested that (1) as much as possible, new industries should be established away from large, congested cities, (2) the planning of new industries should extend beyond the immediate environs to develop a larger area, with the new industry as the major focal point, and (3) in community development project areas, the rural and urban components of development should be integrated to strengthen economic interdependence between towns and surrounding rural areas (Planning Commission, 1961:689). Concerning urban development costs, the plan emphasized the need for appropriate action (1) to control urban land values through public acquisition of land and appropriate fiscal policies, (2) to plan physical uses of land and prepare master plans, (3) to define tolerable minimum standards for housing and other services and prescribe maximum standards to the extent necessary, and (4) to strengthen municipal administrations for initiating new development responsibilities (Planning Commission, 1961:690). Further, as part of the urban development policy, the plan provided an outlay of Rs 290 million for slum clearance and improvement programs.

The Planning Commission decided that during the Fourth Five-Year Plan it might be desirable not only to prevent further population growth in cities like Calcutta and Bombay, but also to initiate population dispersal aimed toward stabilizing population levels in other cities and planning suitable new regional centers for the likely excess. The plan's authors also suggested exploring fully the potential of developing existing small towns (Planning Commission, 1970:398).

Examining past urbanization patterns, possible future trends, and earlier urban development policies that were essentially peripheral, the Town and Country Planning Organisation in 1975 recognized the need for a policy to foster urbanization and to dovetail it into the national strategy for economic and social development. The group formulated the following national urbanization policy objectives:

1. Evolving a spatial pattern of economic development based on the regional planning and location of a hierarchy of human settlements that would permit the exploitation of natural resources in the region, and ensuring functional linkages among the settlements;
2. Securing for both the immediate future and the long term the optimum distribution of population between each region's rural and urban settlements and among various-size towns;
3. Securing the distribution of economic activities in small and medium-size towns and in new growth centers to induce the desired population distribution and achieve maximum economic growth for the future;
4. Controlling and, where necessary, arresting the further growth of metropolitan cities by dispersing regional economic countermagnets to reduce social and economic costs and to improve living levels;
5. Providing minimal levels of services for improving the quality of life in rural and urban areas and gradually reducing the differences between the rural and urban life (Town and Country Planning Organisation, 1975:38f-n).

Pursuing the urban development policies of the Third and Fourth Five-Year Plans, certain state governments took steps to disperse industries in their states. For example, in 1974 Bihar enacted the Industrial Area Development Act and set up Industrial Area Development Authorities for Patna, Muzaffarpur, and Ranchi. It also contemplated promoting ancillary industries around Jamshedpur, Ranchi, Bokaro, Sindri, Dalmianagar, and Barauni. To provide incentive packages to small, medium, and large industries, the Punjab government has concentrated on establishing industrial foci at Bhatinda, Dadri Kalan (near Ludhiana), Hoshiarpur, Jullundur, Khanna, Malerkotla, Mohali, and Rajpura. Most of these are small and medium towns and cities. Gujarat, Karnataka, Maharashtra, and West Bengal also encourage industrial development in areas other than the metropolitan centers. For example, in Karnataka, 75 percent of the applications for industrial licensing in 1973–74 and 80 percent in 1974–75 were approved for locations in areas other than Bangalore and mostly in the backward districts. Maharashtra has selected urban settlements like Ahmadnagar, Aurangabad, Nagpur, Nanded, Nasik, and Tarapur (which are mostly intermediate cities) to encourage industrial development outside the Bombay-Pune region. Since the introduction of a central subsidy in 1971, many other states have begun programs of industrial development in backward areas (Ministry of Works and Housing, 1977:37).

Even with these developments, the balance between urban and regional development has not improved very much. While formulating the Sixth Five-Year Plan, the Planning Commission decided that although urban development required serious attention, programs of agricultural and rural development should receive greater emphasis in a country still largely rural and agricultural in character. Urban development should complement rural development and policies should strengthen links between towns, cities, and the regions beyond (Planning Commission, 1981:389). National urbanization policy should involve specific consideration of regional problems, and each region's urban development should be viewed in relation to rural development (Planning Commission, 1981:395).

Considering the limited resources for urban development, the Commission thought that the urbanization policy during the 1980s should foster the provision of adequate infrastructural and other facilities in the small, medium, and intermediate towns that had been neglected in the past. The aim should be to strengthen those market centers by equipping them with proper housing, water supplies, means of communication, and educational, medical, and recreational facilities so that they could serve as growth and service centers for the rural regions (Planning Commission, 1981:395). The Commission reemphasized the need for positive inducements to establish new industries and other commercial and professional establishments in small, medium, and intermediate cities, taking advantage of the particular special conditions available in each place (Planning Commission, 1981:396).

Noting the slum problem in large cities, the Sixth Plan made substantially larger provisions for the environmental improvement of the slums (Planning Commission, 1981:396).

Noting India's new pace of urbanization and the growth in the secondary and tertiary sectors of the economy as revealed by the 1981 population census, the Planning Commission at a meeting in June 1982 discussed a background paper, "Strategy of Housing and Urban Development: Some New Perspectives," with academics and administrators. Participants at this meeting recommended the appointment of several task forces to formulate a long-term perspective on housing and urban development issues; the perspective could become the basis of the housing and urban development strategy of the Seventh Five-Year Plan (Planning Commission, 1983:v).

The Task Force on Planning for Urban Development considered the likely growth of urban population during the 1980s and 1990s, the increase in the number of metropolitan cities and other class I cities, and the growth of the urban labor force, then recommended that planning for urban development support economic development in the country, state, or subregion, be it in agricultural, extractive or manufacturing industries, or in the tertiary sector. A key objective of urban development planning was that investments in urban services and shelter should coincide with investments in agriculture, industry, mining, and commerce, which provide permanent sources of employment, so that both types of investment would become fully productive (Planning Commission, 1983:xxvi). The task force recommended further that urban development planning be based on regions or subregions rather than the nation and that the regional urban systems be identified according to their economic, climatic, geographical, and transportation characteristics. Within each planning zone, allocations to towns should not be based on population size but rather be related to function and need, with particular emphasis on the towns' industrial and employment potential (Planning Commission, 1983:xxvii).

It is clear from the above description that the central government's urban development strategy has been to disperse industrial, commercial, and other tertiary activities to small and medium towns and intermediate cities that could act as growth centers for a region's rural and urban populations. Some of the state governments already have adopted policies with this strategy and other states are expected to pursue similar policies in the future. We may therefore expect greater development of intermediate cities during the 1980s and the 1990s, and during the next two decades those cities may receive a larger share of migrants than the metropolises or other large cities.

Our analysis of migration patterns to Indian cities relates to the period when the central and state governments pursued basically *laissez-faire* policies of urban development. Even in planned industrial complexes where housing was provided for factory workers, little planning was done to house those engaged in retail trade, commerce, or service activities. The result was haphazard growth of the cities outside the planned areas.

According to our analysis, lifetime migration was highest in cities with 200,000 to 500,000 inhabitants. Service cities attracted more migrants than manufacturing, trade, commerce, or transport cities. Similarly, comparatively new cities attracted more migrants. The proportion of migrants was highest in cities of the central India plateau but lowest in cities of the middle and lower Ganga plains.

We identified 26 cities that had very high proportions of intra-district migrants in their populations; all except five were in the size category of 100,000–200,000 and were located mostly in Tamil Nadu, Andhra Pradesh, and Bihar. They had very low proportions of lifetime migrants in their populations. Those cities were largely of local importance in the national economy. In contrast, 24 cities had high proportions of interstate migrants in their populations; they were generally big cities (five of them were metropolises) and had much higher proportions of lifetime migrants. Most of the cities in this category were of regional, national, and even international importance.

The proportion of inmigrants in the metropolises and larger cities might remain constant or even fall in the future because a major part of their growth is likely to result from natural increases and the expansion of municipal boundaries. Further, the urban-to-urban migration stream is likely to become more dominant than the rural-to-urban stream among migrants to class I cities. Migrants will be attracted to cities with higher employment potential and toward tertiary-sector jobs.

As the Indian government has not developed any migration-responsive policy instruments, it is difficult to predict the major directions of future migration flows—whether they will move toward the metropolises or toward the intermediate cities. The pattern of urban growth during the 1971–81 decade indicates that metropolises with populations of 1 to 4 million, intermediate cities with populations below 500,000, and even small and medium towns all had higher growth rates than the big metropolises or cities with one-half million to 1 million populations (Rakesh Mohan and Pant, 1982:1536–37). Considering the government's emphasis on developing small, medium, and intermediate cities as part of the urban development policy in the Sixth Five-Year Plan and probably in the Seventh Plan, and considering the pattern of urban growth during the 1971–81 decade, we expect intermediate cities and medium towns to attract more migrants in the future. In fact, many cities of the middle and lower Ganga plains and the coastal plains—cities that stagnated in the past—already have certain infrastructural facilities. If programs are begun to create new job opportunities and to raise the level of their infrastructures, those cities will act as important growth centers in their respective regions and will lead toward balanced regional development.

Although industrial cities with expanding industries will continue to attract new migrants, young educated males and females may have a greater tendency to seek white-collar employment in new destinations. It would be useful to increase information channels about job opportunities in specific areas. Otherwise young adult males may continue to shop around in different locations for suitable jobs until they are able to settle down.

APPENDIXES

APPENDIX 1. Formats of three migration tables from the 1971 Indian census of population

A. Migrants to cities classified by sex, broad age group, education, and occupational division of workers

							Educational levels							
	Total migrants		Illiterate		Literate without educational level[b]		Primary		Middle[c]		Matriculation or higher secondary		Nontechnical diploma not equal to degree	
Last residence and age group[a]	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total														
A. Resided in India														
I. Within the state of enumeration but outside the place of enumeration														
(a) Elsewhere in district of enumeration														
(b) In other districts of state of enumeration														
II. States in India beyond the state of enumeration														
Workers by occupational division/nonworkers														
State 1														
State 2														
Etc.														
B. Countries in Asia beyond India (including USSR)														
C. Countries in Europe (excluding USSR)														
D. Countries in Africa														
E. Countries in two Americas														
F. Countries in Oceania														
G. Unclassifiable														

Table A. *(continued)*

Technical diploma or certificate not equal to degree		Graduate degree other than technical degree		Technical degree or diploma equal to degree or postgraduate degree											
				Postgraduate degree other than technical degree		Engineering and technology		Medicine		Agriculture, veterinary, and dairy		Teaching		Others	
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

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a. Age groups are total, 15–29, 30–59.

b. Includes figures for nonclassifiable educational levels.

c. This level does not exist in some states; its omission from a table will be explained in a footnote.

B. Workers and nonworkers according to main activity classified by place of last residence

Last residence	Rural/urban unclassifiable	Total population			Total workers		Workers							
							I		II		III		IV	
							Cultivators		Agricultural laborers		Livestock, forestry, fishing, and hunting, and plantation, orchards, and allied activities		Mining and quarrying	
		P	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total population														
A. Resided in India														
Rural														
Urban														
Unclassifiable														
I. Within the state of enumeration but outside the place of enumeration														
Rural														
Urban														
Unclassifiable														
(a) Elsewhere in the district of enumeration														
Rural														
Urban														
Unclassifiable														
(b) In other districts of state of enumeration														
Rural														
Urban														
Unclassifiable														
II. States in India beyond the state of enumeration														
Rural														
Urban														
Unclassifiable														

	Workers (continued)													
	V Manufacturing processing, servicing and repairs				VI		VII		VIII		IX		X	
	(a) Household industry		(b) Other than household industry		Construction		Trade and commerce		Transport, storage, and communications		Other services		Nonworkers	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
State 1														
Rural														
Urban														
Unclassifiable														
State 2														
Rural														
Urban														
Unclassifiable														
Etc.														
B. Countries in Asia beyond India (including USSR)														
Afghanistan														
Burma														
Ceylon														
China														
Nepal														
Pakistan														
Malaysia														
USSR														
Elsewhere														
C. Countries in Europe (excluding USSR)														
UK (including Northern Ireland)														
Ireland														
Elsewhere														
D. Countries in Africa														
Kenya														
Mauritius														
Mozambique														
Union of South Africa														
Elsewhere														
E. Countries in two Americas														
Canada														
USA														
Elsewhere														
F. Countries in Oceania														
Australia														
New Zealand														
Elsewhere														
G. Unclassifiable														

P—all persons; M—males; F—females.

C. Migrants classified by place of last residence, age group, duration of residence, and marital status (state, district, city)

				Duration of residence and marital status															
				All duration				Less than 1 year				1–9 years				10 years and above			
Last residence	Rural/ urban	Age group	Sex	Total	NM	M	W&D	Total	NM	M	W&D	Total	NM	M	W&D	Total	NM	M	W&D
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Total																	
		0–14																	
		15–19																	
		20–24																	
		25–49																	
		50+																	
		Age not stated																	

NM—never married.

M—married.

W&D—widowed, divorced, and separated persons.

1. Details of column 1 are:
   Total
   A. Resided in India
      I. Within the state of enumeration but outside place of enumeration
         (a) Elsewhere in district of enumeration
         (b) In other districts of state of enumeration
      II. States in India beyond the state of enumeration
   B. Outside India
2. Figures of unspecified marital status are included in total.
3. Figures of unclassifiable last place of residence are included in total.

APPENDIX 2. Cities for which selected characteristics of migrants and nonmigrants have been compared, by 1971 population

Number	Name	1971 population
1	Greater Bombay	5,970,575
2	Delhi	3,647,023
3	Madras	3,169,930
4	Hyderabad	1,796,339
5	Ahmedabad	1,741,522
6	Bangalore	1,653,779
7	Kanpur	1,275,242
8	Poona	1,135,034
9	Nagpur	930,459
10	Lucknow	813,982
11	Jaipur	636,768
12	Agra	634,622
13	Indore	560,936
14	Allahabad	513,036
15	Gwalior	406,140
16	Jodhpur	317,612
17	Gorakhpur	230,911
18	Rampur	161,417
19	Agartata	100,264
20	Pondicherry	153,325

APPENDIX 3. List of cities with classification into categories of the

Serial number and name of city	City size				Growth rate		
	1,000,000+	500,000–999,999	200,000–499,999	100,000–199,999	High	Medium	Low
1	2	3	4	5	6	7	8
1 Calcutta	*					*	
2 Greater Bombay	*				*		
3 Delhi	*				*		
4 Madras	*				*		
5 Hyderabad	*					*	
6 Ahmedabad	*				*		
7 Bangalore	*				*		
8 Kanpur	*					*	
9 Poona	*				*		
10 Nagpur		*			*		
11 Lucknow		*				*	
12 Coimbatore		*			*		
13 Madurai		*			*		
14 Jaipur		*			*		
15 Agra		*				*	
16 Varanasi		*				*	
17 Indore		*				*	
18 Jabalpur		*			*		
19 Allahabad		*				*	
20 Surat			*		*		
21 Patna			*			*	
22 Vadodara			*		*		
23 Tiruchirapalli			*			*	
24 Amritsar			*				*
25 Jamshedpur			*		*		
26 Cochin			*		*		
27 Dhanbad			*		*		
28 Srinagar			*			*	
29 Salem			*		*		
30 Trivandrum			*		*		
31 Gwalior			*			*	

five predictor variables

Functional specialization			Length of existence as class I city				Regional type					
Manufacturing	Trade, commerce, transport	Service	Before 1901	1901–41	After 1941	New cities[a]	Himalayan	Upper Ganga plains	Middle and lower Ganga plains	Central India plateau	Deccan plateau	Coastal plains
9	10	11	12	13	14	15	16	17	18	19	20	21
	*		*						*			
*			*									*
		*	*					*				
	*		*									*
	*		*								*	
*			*							*		
*			*								*	
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APPENDIX 3. *(continued)*

	City size				Growth rate		
Serial number and name of city	1,000,000+	500,000–999,999	200,000–499,999	100,000–199,999	High	Medium	Low
1	2	3	4	5	6	7	8
32 Ludhiana			*		*		
33 Sholapur			*				*
34 Ulhasnagar			*		*		
35 Bhopal			*		*		
36 Hubli-Dharwar			*		*		
37 Meerut			*			*	
38 Visakhapatnam			*		*		
39 Mysore			*				*
40 Vijayawada			*		*		
41 Calicut			*		*		
42 Bareilly			*			*	
43 Jodhpur			*			*	
44 Rajkot			*		*		
45 Jullundur			*			*	
46 Moradabad			*			*	
47 Nasik			*			*	
48 Guntur			*		*		
49 Kolhapur			*		*		
50 Tirunelveli			*			*	
51 Ajmer			*				*
52 Ranchi			*		*		
53 Aligarh			*			*	
54 Durg-Bhilainagar			*		*		
55 Asansol			*		*		
56 Gorakhpur			*			*	
57 Jamnagar			*		*		
58 Bhavnagar			*			*	
59 Saharanpur			*			*	
60 Mangalore			*			*	
61 Belgaum			*			*	
62 Kota			*		*		
63 Bikaner			*			*	
64 Ujjain			*			*	

Functional specialization			Length of existence as class I city				Regional type					
Manufacturing	Trade, commerce, transport	Service	Before 1901	1901–41	After 1941	New cities[a]	Himalayan	Upper Ganga plains	Middle and lower Ganga plains	Central India plateau	Deccan plateau	Coastal plains
9	10	11	12	13	14	15	16	17	18	19	20	21
•				•				•				
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APPENDIX 3. *(continued)*

Serial number and name of city	City size				Growth rate		
	1,000,000+	500,000–999,999	200,000–499,999	100,000–199,999	High	Medium	Low
1	2	3	4	5	6	7	8
65 Warangal			*			*	
66 Thana			*		*		
67 Raipur			*		*		
68 Cuttack			*		*		
69 Dehradun			*				*
70 Sangli			*		*		
71 Gauhati			*		*		
72 Jhansi				*		*	
73 Amravati				*	*		
74 Malegaon				*	*		
75 Rajahmundry				*		*	
76 Tuticorin				*		*	
77 Gaya				*			*
78 Vellore				*		*	
79 Bhagalpur				*			*
80 Erode				*	*		
81 Akola				*	*		
82 Aurangabad				*	*		
83 Jammu				*	*		
84 Kakinada				*		*	
85 Rampur				*			*
86 Udaipur				*		*	
87 Kharagpur				*			*
88 Alleppey				*			*
89 Sagar				*	*		
90 Tiruppur				*	*		
91 Patiala				*		*	
92 Ahmadnagar				*			*
93 Gulbarga				*	*		
94 Shahjahanpur				*			*
95 Burdwan				*	*		
96 Nagercoil				*		*	

Functional specialization			Length of existence as class I city				Regional type					
Manufacturing	Trade, commerce, transport	Service	Before 1901	1901–41	After 1941	New cities[a]	Himalayan	Upper Ganga plains	Middle and lower Ganga plains	Central India plateau	Deccan plateau	Coastal plains
9	10	11	12	13	14	15	16	17	18	19	20	21
*					*						*	
*					*							*
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APPENDIX 3. *(continued)*

Serial number and name of city	City size				Growth rate		
	1,000,000+	500,000–999,999	200,000–499,999	100,000–199,999	High	Medium	Low
1	2	3	4	5	6	7	8
97 Thanjavur				*			*
98 Mathura				*			*
99 Dhulia				*		*	
100 Kurnool				*	*		
101 Firozabad				*	*		
102 Nellore				*		*	
103 Darbhanga				*		*	
104 Bilaspur				*	*		
105 Dindigul				*		*	
106 Ghaziabad				*	*		
107 Eluru				*			*
108 Nanded				*	*		
109 Muzaffarpur				*		*	
110 Bellary				*		*	
111 Rohtak				*		*	
112 Quilon				*	*		
113 Shillong				*	*		
114 Davangere				*	*		
115 Kanchipuram				*			*
116 Kumbhakonam				*			*
117 Ratlam				*	*		
118 Kolar Gold Fields				*			*
119 Berhampur				*	*		
120 Nizamabad				*	*		
121 Muzaffarnagar				*		*	
122 Machilipatnam				*			*
123 Farrukhabad				*			*
124 Faizabad				*			*
125 Nadiad				*		*	
126 Porbandar				*		*	
127 Jalgaon				*		*	
128 Mirzapur				*			*
129 Bhubaneshwar				*	*		

Functional specialization			Length of existence as class I city				Regional type					
Manufacturing	Trade, commerce, transport	Service	Before 1901	1901–41	After 1941	New cities[a]	Himalayan	Upper Ganga plains	Middle and lower Ganga plains	Central India plateau	Deccan plateau	Coastal plains
9	10	11	12	13	14	15	16	17	18	19	20	21
	•				•							•
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APPENDIX 3. *(continued)*

	City size				Growth rate		
Serial number and name of city	1,000,000+	500,000–999,999	200,000–499,999	100,000–199,999	High	Medium	Low
1	2	3	4	5	6	7	8
130 Burhanpur				*			*
131 Sambalpur				*	*		
132 Bhusawal				*	*		
133 Bijapur				*		*	
134 Tenali				*		*	
135 Shimoga				*	*		
136 Ambala Cantonment				*			*
137 Monghyr				*			*
138 Bhadravati				*	*		
139 Cuddalore				*			*
140 Alwar				*		*	
141 Agartala				*	*		
142 Bihar				*		*	
A1 Chandigarh			*		*		
A2 Durgapur			*		*		
A3 Rourkela				*	*		
A4 Pondicherry				*	*		
A5 Bokaro				*			
A6 Imphal				*			

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a. New cities are defined as those cities that came into existence after 1901 and attained

Functional specialization			Length of existence as class I city				Regional type					
Manufacturing	Trade, commerce, transport	Service	Before 1901	1901–41	After 1941	New cities[a]	Himalayan	Upper Ganga plains	Middle and lower Ganga plains	Central India plateau	Deccan plateau	Coastal plains
9	10	11	12	13	14	15	16	17	18	19	20	21
*					*					*		
	*				*					*		
	*				*						*	
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*					*		*					

class I status any time between 1901 and 1971.

APPENDIX 4. Dependent and independent variables used in the regression analysis of cityward migration

A. *Dependent variables*

V1	Percentage of lifetime migrants in the total population of each city
V2	Percentage of male lifetime migrants in the male population
V3	Percentage of female lifetime migrants in the female population
V4	Inmigration rate, total
V5	Inmigration rate, male
V6	Inmigration rate, female

B. *Independent variables*

V7	Percentage of migrants from rural areas among male migrants
V8	Percentage of migrants from urban areas among male migrants
V9	Percentage of intradistrict migrants among male migrants
V10	Percentage of interdistrict migrants among male migrants
V11	Percentage of interstate migrants among male migrants
V12	Percentage of immigrants among male migrants
V13	Percentage of migrants from rural areas among female migrants
V14	Percentage of migrants from urban areas among female migrants
V15	Percentage of intradistrict migrants among female migrants
V16	Percentage of interdistrict migrants among female migrants
V17	Percentage of interstate migrants among female migrants
V18	Percentage of immigrants among female migrants
V19	Percentage of migrants, ages 15–29, among lifetime male migrants
V20	Percentage of migrants, ages 30–59, among lifetime male migrants
V21	Percentage of migrants, ages 15–29, among lifetime female migrants
V22	Percentage of migrants, ages 30–59, among lifetime female migrants
V23	Percentage of unmarried females among lifetime female migrants
V24	Percentage of married females among lifetime female migrants
V25	Percentage of literates among lifetime male migrants
V26	Percentage of literates among male migrant workers
V27	Percentage of literates among lifetime female migrants
V28	Percentage of literates among female migrant workers
V29	Percentage of high school and above among male migrants
V30	Percentage of graduate and above among male migrants
V31	Percentage of high school and above among male migrant workers
V32	Percentage of graduate and above among male migrant workers
V33	Percentage of high school and above among female migrants
V34	Percentage of graduate and above among female migrants
V35	Percentage of high school and above among female migrant workers
V36	Percentage of graduate and above among female migrant workers

V37	Percentage of high school and above among male migrants ages 15–29
V38	Percentage of high school and above among female migrants, ages 15–29
V39	Work participation rate of male migrants
V40	Work participation rate of female migrants
V41	Work participation rate of male migrants, ages 15–29
V42	Work participation rate of female migrants, ages 15–29
V43	Percentage of male migrant workers in divisions 0–2
V44	Percentage of male migrant workers in division 5
V45	Percentage of male migrant workers in divisions 7–9
V46	Percentage of female migrant workers in divisions 0–2
V47	Percentage of female migrant workers in division 5
V48	Percentage of female migrant workers in divisions 7–9
V49	Percentage of total workers in secondary sector
V50	Percentage of total workers in trade, commerce, and transport sector
V51	Percentage of total workers in other services sector
V52	Percentage of male migrant workers in secondary sector
V53	Percentage of male migrant workers in trade, commerce, and transport sector
V54	Percentage of male migrant workers in other services sector

REFERENCES

Ahmad, Qazi Shakil

1965 *Indian Cities: Characteristics and Correlates.* Department of Geography. Research Paper No. 102. Chicago: University of Chicago.

Bulsara, Jal F.

1964 *Problems of Rapid Urbanisation in India.* Bombay: Popular Prakashan.

Census of India 1951

1954 Volume XII, Assam, Manipur, and Tripura. Part I-A, *Report.* Shillong: Superintendent of Census Operations.

Census of India 1961

1964 Volume XXV, Part I, *Pondicherry State, General Report.* Delhi: Manager of Publications.

Census of India 1971

1975 Series 1, India, Part II-A (i), *General Population Tables.* Delhi: Controller of Publications.

Census of India 1981

1984 Series 1, India, Part II-special, *Report and Tables Based on 5 Per Cent Sample Data.* Delhi: Controller of Publications.

Chauhan, D.S.

1966 *Trends of Urbanization in Agra.* Bombay: Allied Publishers.

De Jong, Gordon F., and Robert W. Gardner

1981 *Migration Decision Making.* New York: Pergamon Press.

Dhekney, B.R.

1960 *Hubli City: A Study in Urban Economic Life.* Dharwar: Karnataka University.

D'Souza, Victor S.

1968 *Social Structure of a Planned City–Chandigarh.* New Delhi: Orient Longmans Limited.

Duncan, Otis D., and Albert J. Reiss

1956 *Social Characteristics of Urban and Rural Communities 1950.* New York: John Wiley and Sons.

Fields, G.S.

1972 *Rural Urban Migration, Urban Unemployment and Underemployment, and Job Search Activities in LDC's.* Discussion Paper No. 168. New Haven: Economic Growth Center, Yale University.

Gore, M.S.

1970 *Inmigrants and Neighbourhoods: Two Aspects of Life in a Metropolitan City.* Bombay: Tata Institute of Social Sciences.

Goyal, R.P.

1975 Shifts in age at marriage in India between 1961 and 1971. *Demography India* 4(2), December.

Greenwood, Michael J.

1971 A regression analysis of migration to urban areas of a less-developed country: The case of India. *Journal of Regional Sciences* 11(2).

Harris, C.D.

1943 A functional classification of cities in the U.S.A. *Geographical Review* 33, January.

Harris, J.R., and M.P. Todaro

1970 Migration, unemployment and development: a two sector analysis. *The American Economic Review* 60(1).

India, Ministry of Works and Housing

1977 *Report of the Task Force on Planning and Development of Small and Medium Towns and Cities,* Volume I. New Delhi: Ministry of Works and Housing.

India, Planning Commission

1961 *Third Five Year Plan.* Delhi: Manager of Publications.

1970 *Fourth Five Year Plan 1969–74.* Delhi: Manager, Publications Branch.

1981 *Sixth Five Year Plan 1980–85.* New Delhi: Planning Commission.

1983 *Task Forces on Housing and Urban Development,* I, *Planning for Urban Development.* Delhi: Controller of Publications.

India, Town and Country Planning Organisation

1975 *National Urbanisation Policy.* Proceedings of the Meeting of the Expert Group on National Urbanisation Policy held on 28 January 1975, at Vigyan Bhawan, New Delhi. New Delhi: Town and Country Planning Organisation.

Iyengar, S. Kesava

1957 *A Socio-Economic Survey of Hyderabad-Secunderabad City Area.* Hyderabad: Indian Institute of Economics.

Johnson, G.E.

1971 The structure of rural-urban migration models. *Eastern Africa Economic Review* 1(1).

Lakdawala, D.T.

1963 *Wages and Well-being in an Indian Metropolis* (Economic Survey of Bombay City). Bombay University Series in Economics, No. 2. Bombay.

Lal, Amrit

1957 Some Characteristics of Indian Cities of Over 100,000 Inhabitants in 1951 with Special Reference to Their Occupational Structure and Functional Specialization. Unpublished Ph.D. dissertation, Department of Geography, Indiana University, Bloomington.

Lewis, W. Arthur

1954 Economic development with unlimited supplies of labour. *Manchester School of Economic and Social Studies* 22(2).

Mahmood, Aslam

1975 Patterns of Migration into Indian Cities and Their Socio-Economic Correlates–A Multivariate Regional Analysis. Unpublished M. Phil. dissertation, Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi.

Malkani, H.C.

1957 *A Socio-Economic Survey of Baroda City.* Baroda: M.S. University of Baroda.

Mishra, B.R.

1959 *Report on Socio-Economic Survey of Jamshedpur City.* Patna: Patna University.

Mitra, Asok

1963 *Calcutta: India's City.* Calcutta: New Age Publishers.

1967a Internal Migration and Urbanization in India. Paper for the meeting of the ECAFE's Expert Working Group on Problems of Internal Migration and Urbanization, Bangkok (mimeographed). New Delhi: Office of the Registrar General, India.

1967b Internal migration and urbanization in India, 1961. In *International Union for the Scientific Study of Population: Contributed Papers.* Sydney Conference.

1970 *Delhi Capital City.* New Delhi: Thompson Press (India) Ltd.

Mitra, Asok, Shekhar Mukherji, and Ranendranath Bose

1980 *Indian Cities: Their Industrial Structure, Inmigration and Capital Investment 1961–71.* New Delhi: Abhinar Publications.

Modecki, J.

1975 Description of computer program EWPI-PSC-MAC III for performing multiple classification analysis of data in the form of case records (mimeographed). Honolulu: East-West Population Institute.

Pownall, L.L.

1953 The functions of New Zealand towns. *Annals of the Association of American Geographers* 47, December.

Premi, Mahendra K.

1980 *Urban Outmigration: A Study of Its Nature, Causes and Consequences.* New Delhi: Sterling Publishers Pvt. Ltd.

Rakesh Mohan and Chandrashekhar Pant

1982 Morphology of urbanisation in India: some results from 1981 Census. *Economic and Political Weekly* 17(38 and 39), September 18 and 25.

Ranis, G., and J.C.H. Fei

1961 A theory of economic development. *The American Economic Review* 51(4).

Rao, V.K.R.V., and P.B. Desai

1965 *Greater Delhi: A Study in Urbanisation–1940–1957.* Bombay: Asia Publishing House.

Sen, S.N.

1960 *The City of Calcutta.* Calcutta: Bookland Private Ltd.

Simmons, Alan, Sargio Diaz-Briquets, and Aprodicio A. Laquian

1977 *Social Change and Internal Migration.* Ottawa: International Development Research Centre.

Sovani, N.V., D.P. Apte, and R.G. Pendse

1956 *Poona: A Resurvey: The Changing Pattern of Employment and Earnings.* Publication No. 34. Poona: Gokhale Institute of Politics and Economics.

Todaro, M.P.

1968 An analysis of industrialization, employment and unemployment in LDCs. *Yale Economic Essays* 8(2).

1969 A model of labor migration and urban unemployment in less developed countries. *The American Economic Review* 59(1).

1971 Income expectations, rural-urban migration and employment in Africa. *International Labour Review* 104(5).

1975 Rural-urban migration, unemployment and job possibilities: recent theoretical and empirical research. In A.J. Coale (ed.), *Economic Factors in Population Growth*. London: Macmillan.

1976 *Internal Migration in Developing Countries*. Geneva: International Labour Organisation.

United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP)

1977 *Report of the Expert Group Meeting on Migration and Human Settlements*. Asian Population Studies Series, No. 38. Bangkok.

Yap, Y.L.

1975 *Internal Migration in Less Developed Countries: A Survey of the Literature*. Bank Staff Working Paper No. 215. September. Washington: International Bank for Reconstruction and Development.

Zachariah, K.C.

1968 *Migrants in Greater Bombay*. Bombay: Asia Publishing House.

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Urbanization in China: new insights from the 1982 Census

Sidney Goldstein

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PREFACE

The research reported here was made possible through an Award for Advanced Study and Research from the Committee on Scholarly Communication with the People's Republic of China and support to the Population Studies and Training Center, Brown University, from the Ford Foundation, the Hewlett Foundation, and the American Express Foundation. Special thanks go to the Center for Population Research of the Chinese Academy of Social Sciences for assistance provided during fieldwork in China, and to Zhou Junli and Ma Rong, graduate students from the People's Republic of China in the Department of Sociology, Brown University, for assistance in preparing the census data for analysis. The collaboration of Alice Goldstein, both in the fieldwork and in the preparation of this report, is gratefully acknowledged. Thanks, too, to Norton Ginsburg and Chang-Tong Wu, who kindly shared their reactions to an earlier draft of the manuscript with us.

This is a revised version of a paper presented at the Workshop on China's 1982 Population Census, East-West Population Institute, December 2–8, 1984, Honolulu.

ABSTRACT The concerted efforts of the Chinese government to control population growth through its one-child family policy has understandably received worldwide attention. Less well known outside China is the considerable attention given by Chinese government officials at all levels to problems related to the rural-urban population distribution, the rates of urban growth, and the relations between employment opportunities and rural and urban development. These concerns have led to the emergence of a clearly and firmly articulated policy of strictly controlling the growth of big cities while encouraging the growth of small cities and the development of towns and commune centers into new urban centers.

The availability of data from the 1982 Chinese Census provides a unique opportunity to assess the patterns of urbanization in China and the changes that have occurred since the Census of 1953. My analysis documents that in the three and one-half decades since the establishment of the People's Republic, the urbanization level has risen slowly. Moreover, despite some changes in the urban hierarchy and some evidence of success in controlling big city growth, almost two-thirds of the total urban population remains concentrated in big cities, with almost 40 percent living in metropolises of 1 million and more. China's urban population also remains imbalanced in its geographic distribution, although the extent of the imbalance has diminished somewhat through efforts to achieve higher industrialization rates and urbanization and city development in the inland provinces.

The 1982 populations of cities, towns, and countryside are compared on a range of socio-demographic characteristics, including age and sex, labor force structure, and literacy. The analysis suggests that the 2,664 towns have already assumed a more urban character and that they are likely to play a key role in China's future urbanization. Their development is assessed within the larger efforts at modernization and urbanization and in light of policy developments in the 1980s, including institution of the responsibility system in agriculture and the establishment of economic development zones.

ISSUES AND POLICIES IN CHINA'S URBANIZATION

Urbanization in China, like China itself, has a long history. Through a good part of the 1,000 years from 800 to 1800, China contained the largest city in the world (United Nations, 1980:5). Indeed, China is also credited with having, in the eighth century, the first city in the world to exceed 1 million people–Changan (modern Xian) (Chandler and Fox, 1974). China briefly held the distinction of having the world's only million-plus city a second time, when, after other cities had declined, Beijing attained this size in the late eighteenth century, only to be succeeded soon after by London.

Neither urbanization nor big cities are therefore as new to China as they are to many other developing countries. Nor are problems of development and modernization. As Leung and Ginsburg (1980) have documented, problems of development and modernization confronted the governments of China more than 100 years before the Communist Revolution, and efforts to cope with these problems have involved a large variety of approaches. Nonetheless, it is the modernization process initiated by the People's Republic in the 35 years since its establishment in 1949 that has had the most sweeping impact on the nation as a whole. These efforts to modernize have had to confront, on a massive scale, demographic challenges similar to those faced by other developing countries–rapid population growth, substantial increases in the size of the urban and rural populations, and imbalances both in geographic distribution and in city growth rates.

In China, as in many other developing countries, considerable differences of opinion have emerged–and sometimes have even been reflected in practice–about urbanization's role in the development process and the extent to which urban growth should be controlled. Since 1949, urbanization policies in China at times conformed to the view that expansion of the modern sector requires some spatial polarization to obtain the economies of scale needed to ensure successful development. In view of the early insistence that urban-rural differentials must be leveled, that more emphasis must therefore be placed on rural development, and that cities tended to be seats of corruption and bourgeois influence, the role of cities, and especially big cities, has long been open to question (e.g., see Chiu, 1980). Nonetheless, in the years immediately following establishment of the PRC and during the period of the Great Leap Forward (1958–60), China's urbanization level rose substantially, reaching about 20 percent in 1960. Such development was not wholly inconsistent, however, with Maoist views as expressed in 1956, which, while stressing the importance of developing heavy industry especially in inland places, also recognized the potential of the existing coastal cities and the need to develop agriculture and light industry (Mao, 1977:1–6).

Thereafter, the underlying negative views about the effects of urbanization became dominant–ones more commensurate with the belief that polarization was inconsistent with long-run regional and national development goals. It was feared that such development would run the risk of both exacerbating the problems that big cities face in providing livelihood and adequate infrastructure to their residents and producing tremendous loss of human potential in rural areas and smaller urban locations. This view influenced the readjustment that followed in the early 1960s. Millions of urban residents were resettled in the countryside, resulting in a reduction in the urban population from its peak of 130.7 million in 1960 to 116.5 million in 1963. Overlooking problems of definition (see pp. 6–17), the reduction was short-lived. In 1966, at the beginning of the Cultural Revolution, a new urban population high of 133.1 million had been reached, and each successive year since then has produced a rise in the number of people living in urban places (State Statistical Bureau, 1983a:103). By the mid-1970s, the Cultural Revolution's heritage of a stress on industrialization and minimal attention to urban housing and infrastructural needs had resulted in severe conditions in cities even while their populations grew markedly.

This situation, coupled with the continuing rapid growth of the rural population, led China in 1980 to adopt a policy of planned urbanization that involves strict control of the growth of big cities. The strategy grows, in part, out of the belief, based both on China's own experience and on observation of the situations in other developing countries, that the too rapid growth of big cities gives rise to many problems related to housing, employment, and infrastructure. The concentration of both population and industrial activity in China's big cities has already aggravated shortages of land, water, energy, and transportation facilities. Sixty-five percent of the nation's industrial output value in 1981 was located in the 43 largest cities (Li, 1983).

The critical balance between population and arable land is a major consideration affecting urban policies and accounts in part for the decision in the late 1950s to give big cities control of the adjoining rural counties (Koshizawa, 1978:15). Through such control, each big city is able to ensure its own daily vegetable supplies and can also control the extent to which arable land is converted for housing and industrial purposes, thereby avoiding serious incursions into the city's ability to feed its population.

The official Chinese position is, therefore, that the number of big cities and the size of their populations need correction at the same time that the needs of China's 800 million rural masses must be met. Given this perspective, it is argued that urbanization must be harmonious with both industrial and agricultural development. The need to develop all three concurrently lies behind the basic urban policy of (a) strictly limiting the size of big cities; (b) properly developing medium-sized cities; and (c) encouraging the growth of small cities and market and agricultural towns (Ye, 1982; Zhu, 1981).[1] Li Mengbai (1983:9) has explained the rationale:

> In our circumstances, if only the big cities have good job opportunities, housing, schools, stores and services, and cultural and recreational facilities, then of course people will want to live there. But if all these things are developed in small and medium sized cities, people will be much more willing to live in these places and the population pressure on big cities will be eased.

In contrast to the big cities, medium- and small-sized cities are seen as having more space for industrial development and for housing needs for the resident labor force. Such cities are, therefore, increasingly becoming the locus of new efforts at industrialization. A potential danger here lies in the rapid pace at which some medium-sized cities are growing; the challenge will be to control their future growth lest they also are transformed into the big cities that Chinese policy is intended to avoid. Concern for excessive growth of medium-sized as well as big cities would seem particularly relevant in view of China's efforts, begun in 1984, to develop 14 coastal cities as centers for foreign economic activities. Interviews with Chinese officials indicate their awareness of the serious challenge posed by undertaking the economic development of these cities while continuing to control their population growth.[2]

Unlike big and medium-sized cities, which have generally been seen as the locations of heavy and light industry, smaller cities and towns are viewed as potential locations for handicraft and workshop activities with workers supplied largely from the rural surplus labor force. Such places, it is argued, require less government investment while they also serve as catalysts for changing rural populations into urban ones. What is perhaps most interesting about the stress on development of small places as the proper course of urbanization is the magnitude of the transformation that it would involve. Although planners recognize that any one town can absorb only a limited number of people, they point out that the large number of such places in China allows the aggregate effect to be great: If each of the nation's 2,100 county seats increased its population to 50,000 people, 39 million people would be absorbed into the current 61 million county town residents (Yę, 1982). And if each of the 54,000 commune seats increased to an average of only 5,000 persons, some 270 million would reside in these centers.

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[1] Big cities are defined as having 500,000 or more population; medium cities as having 200,000–499,999 inhabitants; and small cities as having fewer than 200,000 residents.

[2] See also pp. 68–70.

The comparative costs and difficulties of urbanizing in this way, rather than through allowing increased migration to big or even medium-sized cities, has been considered. The counter-arguments that bigger cities are more efficient due to locational considerations and availability of infrastructure are discounted, however, because China's social system is seen as able to compensate for these advantages by providing in smaller places adequate job opportunities, housing, schools, commercial activities, and recreational facilities. Whether, in fact, all of these amenities will be available in smaller places or whether persons living in smaller places and rural areas will be provided with easier access to city amenities remains to be demonstrated. What is clear is that existing policy is premised on the validity of this argument.

Despite growing attention in China to urbanization and the effects of migration, serious obstacles have hampered efforts to assess urban growth patterns and migration's role in this growth and in the alleviation of rural-urban disparities in the quality of life. Among the major obstacles have been (a) limitations inherent in the existing legal and conceptual views of what constitutes migration and urban places and (b) the lack of adequate data to assess both the nature of urbanization and the extent and type of population movement that characterize the urban and rural scenes. The 1982 Chinese Census marks a major advance in coping with some of these problems, both in the attention it has given to definitional concerns and in the wealth of data it has collected.

In exploiting the data that have already become available in the early publications from the census (SSB, 1982; 1983b), this paper attempts to gain insights into China's urbanization patterns in relation to the Chinese policy of controlled urban growth. In doing so, the report also makes limited use of material and insights gained as part of three months of field research on the ways in which the agricultural responsibility system adopted in rural locations has affected population movement and urbanization in China.

DEFINING URBAN PLACES AND THE URBAN POPULATION

Considerable confusion has characterized reports on the size of China's urban population since 1949, in large part because varying definitions of urban place and urban population have been used. Unlike a number of other countries, China has relied not only on criteria related to minimal numbers in a given location or to the percentage of individuals engaged in nonagricultural activity. In China, the definition of urban also has been affected by a unique perspective for viewing the urban population—a perspective based largely on a combination of where people live and who is responsible for providing their grain needs. But this has not always been the case, nor even consistently so at a particular point in time.

Defining urban and rural places

According to Ernest Ni (1960), no definition of rural and urban was given in Chinese sources until 1955. However, both in the data on urban places by size class and in the absence of any sharp changes in the urban population in annual statistics covering the period 1949–1956, indicators suggest that the definition employed by the State Council in 1955 was quite similar to that used by the 1953 Census. According to the 1955 definition, a place was urban if it: (1) had a municipal people's committee or was the seat for a people's committee at the *xien* (county) level or above; (2) had a permanent population of 2,000 or more, of which at least 50 percent were in nonagriculture; or (3) had a permanent population between 1,000 and 2,000, of which at least 75 percent were nonagricultural, and concurrently was also a commercial, industrial, education, health, or communication center (Ni, 1960:3). Evidently, in minority areas a town could also qualify as an urban place if it had a population of fewer than 2,000 inhabitants, a considerable number of whom were engaged in industry or commerce (Ullman, 1961:4). This combination of criteria yielded a total of 5,568 urban places in the 1953 Census, of which 164 were municipalities of 20,000 population and more. Of the 5,404 towns, 256 had between 20,000 and 100,000 population, and the remaining 5,148 had fewer than 20,000 inhabitants, including 193 towns with fewer than 1,000 people.

The total population living in the 164 cities and 5,404 other urban places was not the equivalent of the urban population. Of the 52.3 million people in cities, 43.5 million, or 83 percent, were classified as urban, the rest presumably being classified as rural on the basis of economic activity. In other urban places (towns), 33.7 million, or 95 percent of the 35.3 million residents, were urban, suggesting that the larger places were more overbounded than the smaller ones and therefore included more rural people. In all, therefore, the 1953 Census identified 77.3 million, or 13.3 percent, of China's 582.6 million population as urban.

For the 1964 Census, the criteria were changed. In December 1963, the State Council specified that:

1. An area could be designated a town if industries, commerce, and handicraft trades were relatively concentrated and if the area had a population of more than 3,000 with 70 percent being nonagricultural.
2. An area could be designated as a town if it had a population between 2,500 and 3,000 with more than 85 percent being nonagricultural and requiring the direct administration of the county government.
3. However, places where minority nationality people lived could also be designated as towns if industries, commerce, and handicraft trades were concentrated there and direct administration was needed, even though the population was under 3,000 and less than 70 percent was engaged in nonagricultural production.
4. Designated as cities were places with populations of more than 100,000 or places of fewer than 100,000 that were provincial capitals, heavy industrial bases, fairly big centers for gathering and distributing goods and materials, or important towns in border areas that required the direct administration of the provincial or regional authorities (Ma, 1984:12–13).[3]

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[3] In China, one important way of ranking cities is by their administrative status. The highest ranking cities—municipalities—are those administratively placed under the direct control of the central government. Only three cities—Beijing, Shanghai, and Tianjin—rank as municipalities. Each has been given status equal to that of a province and has under its jurisdiction both the districts of the inner city and several rural counties. In each of these municipalities, a majority

When the new criteria were applied, towns that did not meet the minimum standard were transferred to the jurisdiction of communes, resulting in their classification as rural places. Small cities not meeting the State Council's criteria were reclassified as towns and put under the jurisdiction of county governments. The net result was a reduction in the number of towns from 5,404 in the 1953 Census to 3,148 in the 1964 Census. Since the reclassification process evidently had not been completed at the time of the census, some places were still officially identified as towns and included in the urban population in the 1964 Census even though they did not meet the new criteria. The completed reclassification after 1964 yielded fewer than 3,000 towns; at the time of the 1982 Census, only 2,664 towns met the official criteria. Thus, between the 1953 and 1982 censuses, the number of designated towns was reduced by more than 50 percent, from 5,404 to 2,664 places. However, since most of these places were small, the aggregate number living in them probably did not exceed more than a few million and so did not seriously affect comparability with later censuses in the total size of the urban population.

The criteria adopted in 1963 also applied to cities; as a result, some cities were reclassified as towns. The change in the number of cities between 1964 and 1982 was not sharp, however, because the number of cities that were downgraded according to the 1963 criteria was offset by the number of new cities developed in the post-1963 period in response to national planning. By the end of 1982, according to the *1983 Statistical Yearbook* (SSB, 1983a), China had already increased the number of cities from 236 identified in the 1982 Census to 245, and at least 14 new locations were reclassified as cities in 1984 (*People's Daily,* January 20, 1984). The 1964 and 1982 Censuses thus used the same basic criteria for designating places as urban,

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of the total city population lives in the inner city, but this ranges from a high of 66 percent for Beijing to only 53 percent for Shanghai.

Ranking under the three municipalities are those cities directly under the leadership of the provincial government: the 26 capital cities of the provinces and autonomous regions that serve as the political, cultural, and economic centers of the provinces. In 19 of the 26 provinces, the provincial capital city is the largest city in the province; of the 26 provincial capital cities, 19 exceeded 1 million in population in 1982, and of these, seven had more than 2 million. The remaining cities in China, those other than the provincial capitals and the three municipalities, have usually gained size or importance because of their economic function, but occasionally because they serve some other key function in the province.

although the 1964 Census included 484 towns that were later shifted to rural status; it is not possible to determine how many people this involved.

Defining the urban population

Understanding the various criteria used to define the urban population requires recognition of the central role that the household registration system plays in defining an individual's residence status and in controlling permanent migration.

The Registration System and Migration

Each individual in China has an official place of residence, the record of which is maintained at the brigade level in rural areas and at the neighborhood level in urban places by the Public Security Bureau. To effect a permanent change in residence, permission must be granted by the appropriate authorities in the places of origin and destination. Peasants can generally obtain an urban household register in only a limited number of ways. The most prominent are:

1. University enrollment, which carries with it urban household registration, which is then retained.
2. City or industrial expansion into farmlands, which may entitle peasants displaced in the process to urban household registration.
3. Permanent employment in an urban place, which leads to urban registration. In such cases family members of the employee must generally retain their rural household register, even if they in fact live in the city.

Given the close interrelations between the registry system and population movement in China, an individual is considered a permanent migrant only if the move involved a change in household registration. Thus, persons living in cities who are not *de jure* residents of those cities are not counted as part of the city population in any enumeration based on household registers. Nonetheless, a considerable amount of "temporary" movement to urban places exists in China, and such movement is often officially sanctioned. Since *de facto* residents may be substantial in number and selective in their socioeconomic and demographic characteristics, their omission from urban registers and statistics distorts the data on the size and composition of urban places and the data on rural populations at places of origin.

The 1982 Census Qualifications

In partial recognition of this situation, the 1982 Chinese Census identified separately and counted as residents those people who had lived in a given locality for more than one year even though they were registered elsewhere and those who had resided in the locality less than one year but were absent from their place of registration for more than a year.[4] In this respect, the 1982 Census results are not and should not be identical with the register enumerations, despite the heavy reliance on the latter to ensure the complete coverage in the census.

Particular attention was given in the census to the problems inherent in identifying the permanent residence of mobile individuals. For example, people in rural communes and production brigades often went temporarily to another city or county as peddlers or construction workers or for other activities but came back frequently. They were not considered as being away for more than one year and were enumerated in the places of their household registration. Persons involved in activities that required geographic mobility–such as prospecting, transportation and communication, mobile sales of handicrafts and sideline products, and construction–were also enumerated at the place of their household registration to facilitate enumeration and avoid duplication or omission. An indeterminate number of people living in cities without any kind of official sanction may also have reported themselves as temporary urban residents (for less than one year) in order to avoid bureaucratic difficulties; they, too, would have been enumerated by the census as living at their place of registration.

Among the 1.002 billion people enumerated (excluding Taiwan, Hong Kong, Macao, and Tibet), preliminary tabulations of the census results indicate that 98.9 percent (990.6 million) lived in their places

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4. In the census, each household member was classified into one of the following five categories of residence: (1) residing and registered in the locality, including individuals who had been away from place of registration for less than one year; (2) residing in a place more than one year but registered elsewhere; (3) residing in a place less than one year but absent continuously from the place of registration for more than one year; (4) living in the locality at time of census but status of registration not yet settled; this category includes persons such as demobilized soldiers waiting for job assignments, students, and ex-criminals released from institutions; (5) originally living in the locality but abroad at time of the census for work or study and therefore without registration.

of registration (SSB, 1982). Of the remainder, 6.3 million people resided in places in which they had lived more than one year without permanent registration, and 4.8 million reported residence with registration still to be settled. Only a small number (210,000) were reported as residing in the particular location of enumeration for less than one year but absent continuously from their legal place of registration for more than one year. Still fewer (57,000) were reported as living overseas. Since it is likely that the large majority of "temporary" migrants, including those away for at least a year, are rural-to-urban movers, the volume and composition of this segment of the Chinese population has particular significance for the nation's urban development.

Temporary Movement

In addition to the population officially registered in urban places and those without registration but counted by the 1982 Census as living in cities and towns, a growing number of "temporary" migrants also swells the urban population. This segment of the population has increased dramatically since 1979 as a response to the growing amount of surplus rural labor created by implementation of the agricultural responsibility system.

At least four different forms of temporary mobility can be identified.

1. Temporary residents may be construction workers (who sometimes number in the thousands) who are recruited from rural areas to provide the labor needed to build major projects including satellite towns, factory complexes, and university expansions.
2. Communes may send groups of their residents to the city to operate collective shops or engage in other commune-sponsored enterprises.
3. Peasants come to cities for days or even weeks to sell their produce and sideline products.
4. Growing numbers of individuals move from rural areas into cities where they are hired on a private basis for their services and skills in such jobs as childcare, housekeeping, and carpentry. All continue to be officially registered in their rural places of origin and hold only temporary residence permits in the city.

Unfortunately, no body of statistics is readily available to document the volume and characteristics of these types of temporary movement. This documentation difficulty reflects the nature of the registration system. Although a "permanent" legal transfer of household registration is carefully controlled and documented, temporary movement is not. Temporary residents can easily obtain temporary registration from the Public Security Station if they are living with relatives or friends; residence in a hotel or in work unit facilities requires no registration at all. Temporary residents involved in free markets are registered with the Industrial and Commercial Bureau. Many others do not register at all, since the regulations are often not rigorously applied. The net result is a complex system that does not lend itself to centralized statistics or at least to their ready availability.

Not only does the system's deficiency frustrate city planners, who are unable to assess the volume and character of temporary movement for proper planning of urban services, it also distorts estimates of the size and characteristics of the urban population. Temporary migrants are undoubtedly selective in terms of a number of socioeconomic characteristics, including age, sex, and occupation. Many remain in the urban location for extended periods of time and in terms of their economic activity and residential needs would, under most definitions, be included in the urban population.

The Criterion of Grain Source

The fact that many temporary migrants are not classified as urban relates both to the nation's regulations controlling rural-urban migration and to another criterion often used to define the urban and rural population–the individual's source of grain supply. As long as a person holds a rural registration, regardless of the individual's occupation or *de facto* residence, the commune of official residence is responsible for supplying the individual's annual grain allotment. In urban places, grain is purchased from state outlets, and the state is responsible for providing adequate supplies.

Reliance on the source of grain supply as the basis of classification as urban or rural therefore creates a major problem of comparability in the Chinese data on urban-rural distribution. This definition was widely used after the 1964 Census at least into 1984, with resulting enumerations far different from those revealed by the censuses. (Compare, for example, Aird, 1982:279–82; see also Banister, 1984: 264–66.) The magnitude of the problem is illustrated by a news account in the *Beijing Review* (1983) that compared the 1982 Census results, showing an urban population of 206 million, with the 138 million reported as urban in the previous year by the registry statistics, which indicated an urban growth of 68 million in one year. The report hastened to explain that in addition to the effects of natural increase, permanent migration, and some increase in the number of cities between 1981 and 1982, an important factor accounting for the increase in urban population was the different method of defining the urban population. The 1981 statistics, based on registry data, count as urban only those residing in urban places whose grain was supplied by the state (termed "commercial grain"), a group defined operationally as nonagricultural. Excluded were those living in urban places who were dependent on their own or on their commune's production for their personal grain supply and who were operationally classified as agricultural, even though they may have been engaged in nonagricultural activities.

What particularly complicates the dichotomy is that under this system, individuals who have moved into an urban location and have lived there more than one year but have not changed their registration continue to be classified as agricultural, even if they are engaged in nonagricultural work. The original designation under which they are registered determines their status, and the key criterion is the source of their grain. Similarly, members of communes that are located within officially designated city boundaries are also defined as "agricultural" because they obtain their grain from their communes. Under this system, the urban population more closely resembles a *de jure* rather than a *de facto* count, with only those registered in urban places and receiving commercial grain counted as urban residents.

The effect of the differences in definition is illustrated by data available from the *1983 Statistical Yearbook* (SSB, 1983a:107–8). Excluding the counties and the county towns under the cities' administration (i.e., referring only to inner city populations) but including all residents of the city regardless of how they obtained their grain, 145.2 million people were reported as living in China's 239 cities at the end of 1982. Of these cities, 85 had populations of more than 500,000 and accounted for 74.9 percent of the total city population. Only 17 cities had populations of fewer than 100,000 people; these cities accounted for less than 1 percent of all people living in Chinese cities.

But note how the size and distribution changes if the city population is restricted, by definition, to those residents who obtain their grain through state outlets. The aggregate number shrinks by almost one-third to 97.1 million, implying that almost 50 million people living in cities are directly dependent on communes for their grain. The number of those who actually are members of communes located within city limits and the number of those who live in the city while remaining registered commune members cannot be ascertained from available data. Moreover, the effect on the city hierarchy is also dramatic. The number of big cities with more than 500,000 population declines from 85 to 48, and the percentage of total city population living within big cities is reduced from three-fourths to below two-thirds (63.8 percent). For small cities, the change in definition has the opposite effect: The number of cities of less than 100,000 increases from 17 to 55, and the population of such places almost triples, while its percentage of the total rises from less than 1 percent to almost 4 percent. If places of 100,000 to 300,000 are included in the small-city category, the corresponding changes in number are from 108 to 160 and the percentage of total city population rises from 12.8 to 23.9 (SSB, 1983a:107).

The effect of criteria employed in identifying the urban population can also be seen by comparing the size of the urban population of individual inner cities using the criterion of residence and agricultural/nonagricultural status. The ratio of the latter statistic to the former varies significantly from city to city (SSB, 1983a:108). Shanghai, for example, at the end of 1982 had 6.27 million urbanites (excluding the population of the rural counties controlled by the municipality) if based on residence and 6.22 million if based on grain supply source, so that there was minimal difference as indexed by a ratio of 99.2 nonagricultural population per 100.0 total residents. Beijing's ratio was noticeably lower (85.9), reflecting the inclusion of many more residents who were supplied by grain directly from communes. For big cities such as Chengdu (57.1), Xian (73.5), and Guangzhou (76.3), the ratios were even lower. For all of the 20 cities with more than 1 million nonagricultural residents, the ratio was 80.8; this contrasted with a ratio of 70.4 for the 20 cities with populations between 500,000 and 1 million. The contrast suggests that overall size affects the extent to which the different criteria "produce" different urban populations. In general, larger cities are characterized by a high ratio, suggesting that these bigger cities generally encompass fewer rural areas within their *inner* city boundaries; when the cities expand to incorporate rural areas, these become more rapidly urbanized than newly incorporated rural areas of somewhat smaller cities. Whether this relation extends to medium- and small-sized cities remains to be determined when comparable data on a city-by-city basis become available.

Suburban Counties, Urban or Rural?

Another complicating factor in defining the urban population size in 1982 is added, however, because of the state policy (see p. 3) that has allowed selected cities to place a number of adjoining counties under their jurisdiction. According to the 1982 Census (SSB, 1983b: Table 11), 58 cities have suburban counties. These were distributed among cities of all size classes but were disproportionally concentrated among big cities. Of these, 45 percent had suburban counties, compared with only 16 percent of medium-sized cities and 6 percent of small cities. For all these places, the city boundaries were thereby effectively extended to encompass both inner city districts and the officially designated suburban counties. If no attention is given to this distinction, as in the case of some reports issued by the United Nations, China's urban population is greatly expanded. For example, in 1982, the combined inner city and suburban county population numbered 227.1 million; this figure represents a 50 percent increase over the 145 million urban population of the cities' inner districts and raises the percentage of the population in cities from 14.5 to 22.7 percent of China's total population.

Some of the towns classified as urban are within these suburban counties. Since currently available data do not allow separation of these towns from the suburban counties, one cannot ascertain how many of the 61 million reported by the census as living in all towns in China are encompassed within suburban counties. It is clear, however, that if the nation's total urban population were to include not only all the cities and towns, but also the balance of the suburban counties, over which cities have jurisdiction, then China's level of urbanization would be well beyond the 20.6 percent reported by the 1982 Census. The choice of data used also affects the nature of China's urban hierarchy. The possibility of using the combined inner city and suburban county population instead of only residents of the inner city as the total city population argues for careful attention first to which data set is being used.

The challenge of comparability

Overall, my assessment suggests that depending on which criteria are adopted, very different views emerge about the character of overall urbanization in China. Insights are difficult to draw, however, on how the nature of urban places can change depending on who is included or excluded under differing definitions. Nor is it possible to completely judge the role of urbanization in the development/modernization process without such information.

Both the problem of how to define urban populations and the magnitude of the difference are exacerbated by the fact that registry statistics and other data sources continue to rely on the definition of urban in terms of grain source. This definition introduces major discrepancies that create severe problems of comparability, both over time and between China and other nations. One can only hope that as the Chinese continue to focus their efforts on improving their statistical systems, the problems associated with the use of widely different definitional criteria will be resolved. The 1982 Census made the firm decision to include as urban all persons who had resided for a year or more within cities and towns designated as urban by the State Council, regardless of the source of their grain ration or their place of registration; this decision is a major step forward. It warrants replication in other statistical systems to ensure comparability. As a step toward enhancing standard definitions and comparability, the *1983 Statistical Yearbook* (SSB, 1983a:103) has issued a time series covering 1949–1982 in which the annual estimates beginning in 1964 have been adjusted to make them comparable with the 1982 criteria. The pre-1964 data have not yet been adjusted to ensure comparability with 1982, thus creating a break in the continuity of the series between the 1963 and 1964 year-end statistics (Banister, 1984). These differences in comparability must be recognized in the ensuing analysis both for data referring to the unadjusted pre-1964 population figures and for data sets thereafter which use urban definitions different from those employed by the 1982 Census. It must, at the same time, be recognized that the quality of the various data sets–including the 1953 and 1964 censuses–varies and that this may also affect comparability. As Ansley Coale (1984) has noted, however, various quantitative comparisons among numbers derived from the censuses of 1953, 1964, and 1982 and from the large-scale fertility survey conducted in 1982 show a surprising degree of consistency. (See also Banister, 1984:241–43.)

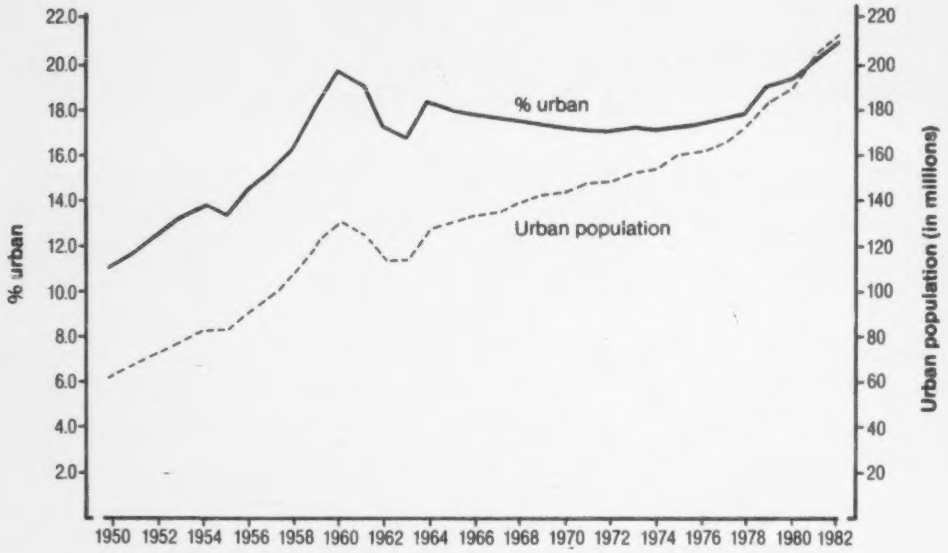
LEVELS AND PATTERNS OF URBANIZATION IN CHINA

Changes in urbanization levels

In 1949, China's total population, according to the estimates prepared by the State Statistical Bureau (1983a), was just more than half of what it was at the time of the 1982 Census–541,670,000 people in 1949 compared to 1,003,790,450 people enumerated in 1982. By the end of 1982, the State Statistical Bureau estimated that China's population was 87 percent greater than it had been at the end of 1949. This growth, equivalent to an annual rate of 1.87 percent, did not apply uniformly to both urban and rural places.

In 1949, only 10.6 percent of China's population lived in urban places yet their number (57.6 million people) was more than the total populations of all but 11 countries of the world as recently as 1983. By the 1982 Census, the urbanization level had doubled to 20.6 percent but was still well below the level of urbanization in developing countries as a whole, which was about 32 percent in 1982 (United Nations, 1982). (Figure 1) The 206.6 million living in urban places in China were exceeded in number by the total populations of only three countries of the world–the United States, the Soviet Union, and India. By the end of 1982, according to SSB estimates, the number had already risen to 211.5 million, making China's urban population 3.7 times greater than it had been at the end of 1949. By contrast, and despite an overwhelming estimated size of 803.9 million at the end of 1982, China's rural population was only 1.7 times greater than it had been 33 years earlier. These 800 million rural people, a growing number of whom are becoming surplus labor, constitute a major reservoir of potential migrants to cities and present China with a major challenge of how to control its urbanization rates while it proceeds to develop and modernize the countryside.

Between 1949 and 1982, the pace of urbanization in China was uneven. Changing policies related to the control of urban growth and the location of industry, political factors associated with the Great Leap Forward and the Cultural Revolution, and natural catastrophes have all affected the speed of change in urbanization levels. Moreover,



Note: In Figures 1–4, data on the urban population before 1964 are based on a definition that differs from that used from 1964 on; no adjustment for this difference has been made.

FIGURE 1. Urban growth in China, 1949–82

because of efforts at different times since the 1950s to reduce the birthrate–success varied both over time and between urban and rural places–the annual growth rates in both urban and rural places have varied considerably from year to year, even while the long-run pattern has been one of rising urbanization levels concurrent with growing numbers of people in both urban and rural places.

China's first census in 1953 followed a period of reconstruction and marked the beginning of the first Five Year Plan (1953–58). At that time, China's urban population was enumerated at 77.3 million and its end-of-year population is estimated by the State Statistical Bureau to have been 78.3 million persons, equivalent to an urbanization level of 13.3 percent (Table 1). These figures suggest that the initial years following the establishment of the People's Republic in 1949 resulted in substantial urban growth. In absolute terms, the number of people living in cities increased during this four-year interval by 21.6 million, almost as much as the number living in rural areas, 25.7 million. Given the different base populations, the urban growth rate was much

TABLE 1. Urban and rural population, selected years
(Year-end, in 1,000s)

Year	Total	Urban[a]	Rural[b]	% urban
1949	541,670	57,650	484,020	10.6
1953	587,960	78,260	509,700	13.3
1960	662,070	130,730	531,340	19.7
1964	704,990	129,500	575,490	18.4
1970	829,820	144,240	685,680	17.4
1974	908,590	155,950	752,640	17.2
1980	987,050	191,400	795,650	19.4
1982	1,015,410	211,540	803,870	20.8

SOURCE: State Statistical Bureau (1983a:103–04).

a. Urban refers to population of inner cities and towns and includes the military population.

b. Rural refers to counties, including suburban counties of cities, exclusive of towns.

higher, 36 percent for the four years, compared with only 5 percent in rural areas.

The first Five Year Plan had a clear bias toward heavy industry and building large urban centers. It also coincided with the establishment of the people's communes, which caused considerable rural dislocations and massive rural-to-urban migration (Orleans, 1982:278–79). The outflow of peasants was so great that the resulting pressures on cities led, during 1956–1957, to the mobilization of millions of people, especially youths, to move from the cities to the villages and also led to attempts to institute controls on rural-urban movement. But cities continued to grow. The controls, which met with only limited success, were abandoned altogether in 1958 when the Great Leap Forward began. For the next two years–until natural calamities and mismanagement brought a halt to the Great Leap Forward–the urban population was swollen by in-migrants.

Reflecting the effects of these various policies, the SSB data on urban and rural populations indicate a continuing growth of the urban population from 77 million people at the time of the 1953 Census to a peak of 130.7 million at the end of 1960; the 1960 level of urbanization was thus 19.7 percent, well above that reported in the 1953 Census and almost double that in 1949. With the collapse of the Great Leap Forward, millions of urban residents were relocated to rural areas (Orleans, 1982:279); the urban population declined to a low of

116.5 million people at the end of 1963, accounting for only 16.8 percent of the total population. A spurt of growth followed (the reasons are not clearly explained by the available data) so that by 1964, the urban population had risen to 129.5 million, or 18.4 percent of the total population.

Since 1964, according to SSB estimates, both the urban and the rural populations have been characterized by continuous increases. The unrest associated with the Cultural Revolution between 1966 and 1976 and the return of rusticated youths and others to cities have contributed to urban growth. Despite restrictions on rural-urban migration, such movement has also contributed to the growth of big cities and even more to the growth of medium- and small-sized places. The result is that between the end of 1964 and the end of 1982, the urban population grew from 129.5 million to 211.5 million, averaging an annual increase of 2.7 percent. The rural population also experienced substantial growth at an average rate of 1.9 percent, increasing from 575.5 million to 803.9 million by the end of 1982.

As earlier discussion of China's definition of urban indicated, the urban population includes those living in cities and residents of towns. At the time of the 1982 Census, China had 236 cities and 2,664 towns.[5] The number of people residing in cities far exceeded the town population; just more than 70 percent of all of the urban population was living in cities, equalling 14.5 percent of China's total population.[6] The 30 percent of the urban population living in towns constituted only 6.1 percent of China's people; the remaining 79.4 percent live in rural areas. Clearly, urbanization in China has been largely a city phenomenon; whether the recent emphasis on towns as a potential location for increasing urban settlement will change this situation remains to be seen.

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5. By the end of June 1984, reports released by the National Conference on the Development of Small Cities and Towns indicated the number of towns in China had risen to 5,698. This impressive increase was attributed to the effects of the burgeoning commodity economy and new emphasis on town development (*People's Daily*, September 9, 1984).

6. Unless otherwise indicated, the city population is restricted to inner city districts; the suburban counties which include a considerable rural population are omitted, although they are administratively part of the city (*shi*).

Regional distributions

China's population is unequally distributed in relation to the geographic size of the various regions[7] (Map 1). Most extreme are the East region, which in 1982 encompassed 29 percent of China's population but only 8.5 percent of its land area, and the Northwest, which contained only 7 percent of the population but one-third of the nation's territory. The other regions also showed imbalances between the proportion of the country's population and the land area. Thus, the three regions that encompass most of China's coastal provinces (East, Northeast, and Central-South) contained two-thirds of the total population but only one-third of the land; and the two regions containing only land-locked provinces (Northwest and Southwest) accounted for 59 percent of the land area but only 23 percent of the population. The North region, which includes the coastal municipality of Tianjin as well as sparsely populated Inner Mongolia, had a closer balance between population and land area: 11.4 percent and 8.3 percent, respectively.

Distribution of the Urban Population

The data by region (center panel, Table 2) indicate that China's urban population is also unevenly distributed. Just more than 60 percent of the urban population is resident in three regions–the North, the Northeast, and the East–whereas only 47 percent of the rural population lives in these sections of the country. As already suggested, the Northwest is sparsely populated, and accounts for only 7 percent of the urban and the rural populations of China. Reflecting their much greater density but their lower levels of urbanization, the Central-South and the Southwest regions account for 32 percent of the urban population but 46 percent of the rural. Sichuan Province alone

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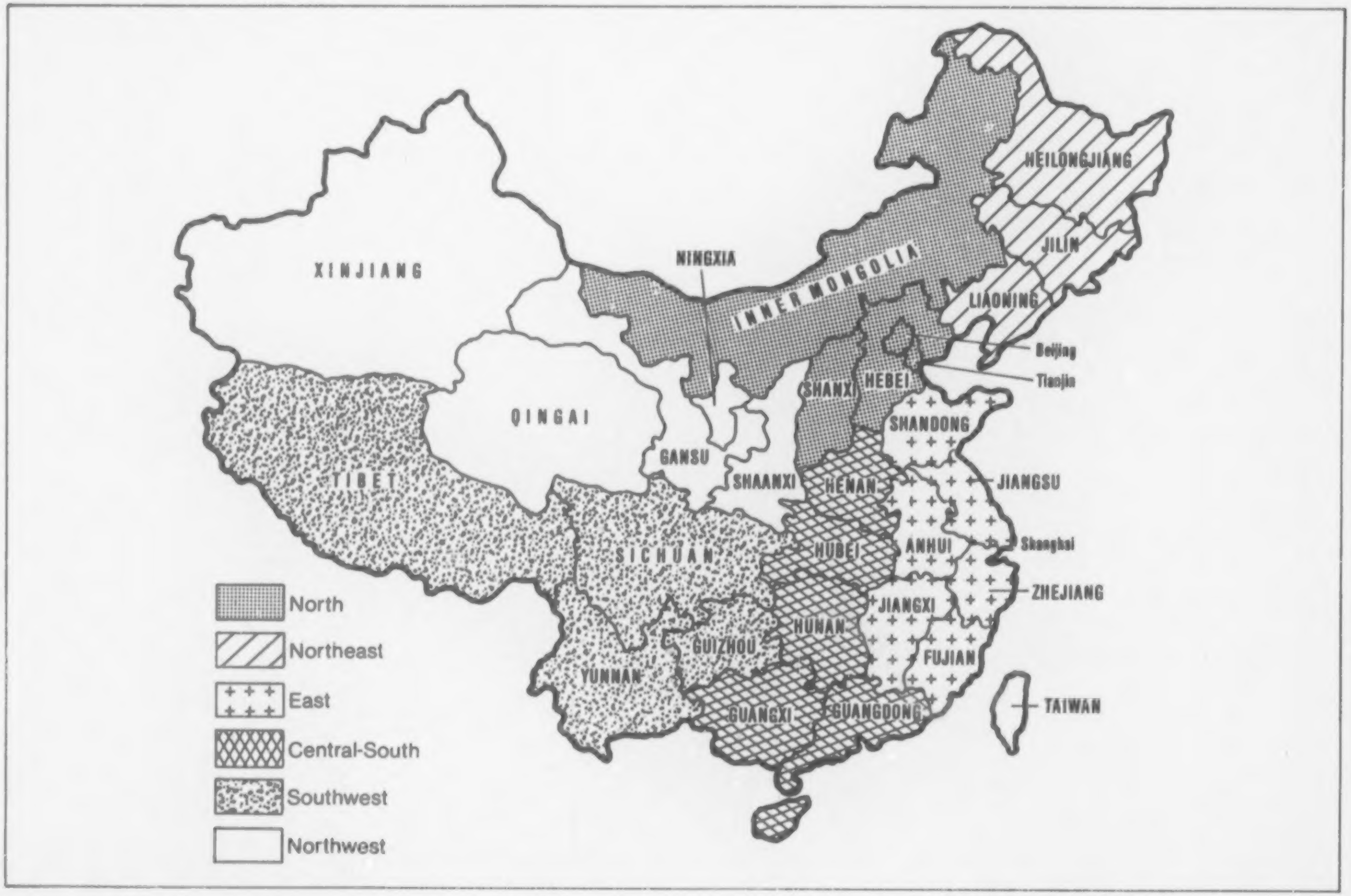
[7] The regions delineated in this paper correspond to the Administrative Areas established in 1949–50 (Ginsburg, 1952). Designed initially for political-administrative purposes, they were not and are not designed as coherent economic planning units. Nevertheless, these regional distinctions are still used in China for statistical and other purposes even though their administrative role has fallen into disuse. In this paper, they serve as a way in which to examine geographic urbanization variations which are in large part consistent with the regional distinctions used by other analysts of spatial development in China (compare Chiu, 1980:99–107). The same regions have also been used recently by other scholars evaluating China's population situation (for example, Orleans, 1982:Table 2; Taylor, 1984).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SHANDONG
SHAANXI
HENAN
JIANGSU
TIBET
SICHUAN
HUBEI
ANHUI
Shanghai
ZHEJIANG
JIANGXI
HUNAN
GUIZHOU
YUNNAN
FUJIAN
GUANGXI
GUANGDONG
TAIWAN
North
Northeast
East
Central-South
Southwest
Northwest

MAP 1. China's administrative and regional divisions

TABLE 2. Population of cities, towns, and rural areas, by region, 1982

Region	Cities	Towns	Total urban	Rural areas	Total
Number of people (in millions)					
North	24.2	5.2	29.4	85.1	114.6
Northeast	25.9	11.4	37.3	53.6	90.9
East	41.0	18.7	59.7	234.7	294.4
Central-South	27.1	14.9	42.0	230.0	272.0
Southwest	16.5	7.8	24.3	138.5	162.7
Northwest	10.0	3.9	13.9	55.5	69.3
Total PRC	144.7	61.9	206.6	797.4	1,003.9
% distribution by region					
North	16.7	8.4	14.3	10.7	11.4
Northeast	17.9	18.4	18.1	6.7	9.1
East	28.4	30.2	28.9	29.4	29.3
Central-South	18.7	24.0	20.3	28.8	27.1
Southwest	11.4	12.6	11.7	17.4	16.2
Northwest	6.9	6.4	6.7	7.0	6.9
Total PRC	100.0	100.0	100.0	100.0	100.0
% distribution by urban/rural category					
North	21.1	4.6	25.7	74.3	100.0
Northeast	28.5	12.5	41.0	59.0	100.0
East	13.9	6.4	20.3	79.7	100.0
Central-South	9.9	5.5	15.4	84.6	100.0
Southwest	10.1	4.8	14.9	85.1	100.0
Northwest	14.3	5.7	20.0	80.0	100.0
Total PRC	14.4	6.2	20.6	79.4	100.0

SOURCE: State Statistical Bureau (1982:Table 5).

(located in the Southwest), with its 100 million people and highly rural character, is a major factor in this distribution.

Of interest, too, is the regional distribution of the city and the town population (Figure 2). The difference between these two distributions within regions is much less than the differential regional distribution of the urban and rural populations. Only in the North, and to a lesser extent in the Central-South, does the percentage of city population located in the region differ substantially from the percentage of town population. Relatively twice as many of China's city residents live in the North than do its town residents (16.7 versus 8.4 percent),

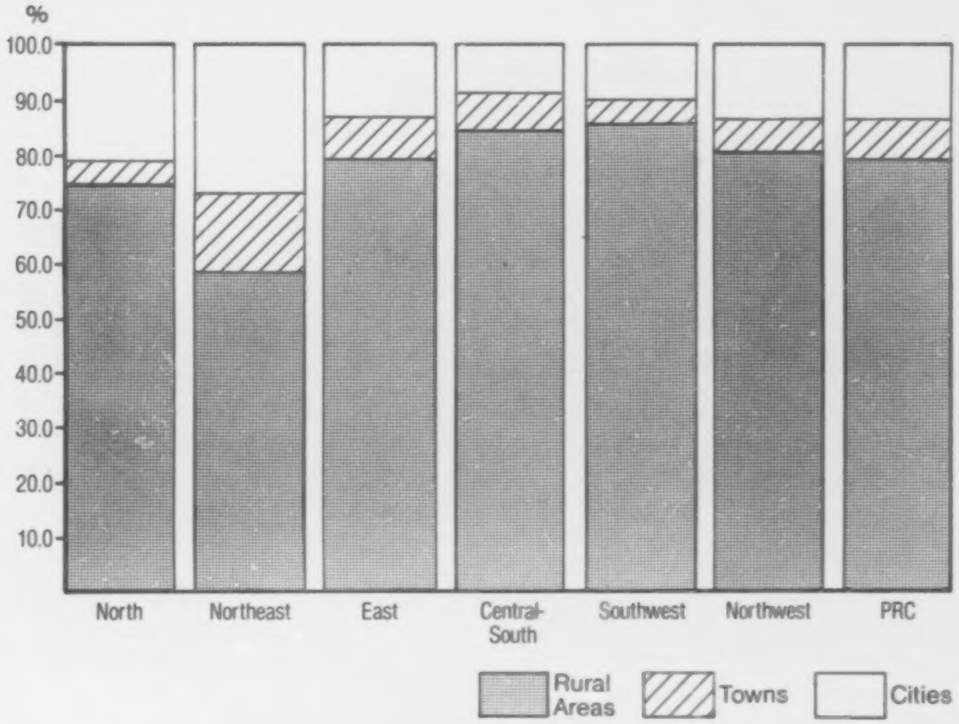

FIGURE 2. Distribution of regional populations among rural areas, towns, and cities: China, 1982

whereas the Central-South region contains substantially more of China's town than city population. The East region, however, clearly contains the largest proportion of China's urban population, judged either by those living in the cities or in towns. The index of dissimilarity indicates that the difference between the regional distribution of the city and town populations is less than the difference between urban and rural; only 4.4 percent of the population would need to be redistributed for the city and town distributions to resemble each other among regions, whereas 7.5 percent would have to be redistributed before the percentages of the urban and rural populations were similar.

Although these regional variations were still pronounced in 1982, comparisons with data from the 1953 Census indicate that they had lessened considerably during the 30-year interval. In 1953, the Northeast had the highest levels of urbanization of any region, with more than one-third of its population urban (Table 3). The North and East

TABLE 3. Number and distribution of urban population by region, 1953 and 1982, and % change

Year and region	Population (1,000s) Total	Population (1,000s) Urban	% urban	% distribution of urban	% change 1953–1982 Total	% change 1953–1982 Urban
1953						
North	65,000	12,705	19.5	16.4	–	–
Northeast	43,753	15,619	35.7	20.2	–	–
East	179,459	24,221	13.5	31.4	–	–
Central-South	159,563	12,954	8.2	16.8	–	–
Southwest	99,469	8,435	8.4	10.9	–	–
Northwest	35,359	3,323	9.4	4.3	–	–
Total	582,603	77,257	13.3	100.0	–	–
1982						
North	114,566	29,452	25.7	14.3	76.3	131.8
Northeast	90,947	37,315	41.0	18.1	107.9	138.9
East	294,408	59,750	20.3	28.9	64.1	146.7
Central-South	271,956	41,940	15.4	20.3	70.4	223.8
Southwest	162,713	24,249	14.9	11.7	63.6	187.5
Northwest	69,347	13,882	20.0	6.7	96.2	317.8
Total	1,003,937	206,588	20.6	100.0	72.3	167.4

SOURCES: Data for 1953 from Orleans (1982). Data for 1982 from State Statistical Bureau (1982).

had the next highest urban percentages but at substantially lower levels. Minimum differences characterized the other three regions, each being 8–9 percent urban.

As previously discussed, this pattern had changed substantially, testifying to some success in China's efforts to decentralize its population and cities (Figure 3). While the Northeast continued to be the most urbanized region, the Central-South, Southwest, and Northwest greatly increased their urban percentages to between 15 and 20 percent. As a result, whereas the Northeast in 1953 was more than four times as urbanized as the least urbanized regions, in 1982 it was not even three times as urban as the least urbanized, and more often the ratio was 2:1 or 1.5:1.0. Urbanization, broadly defined, had become considerably more widespread.

The change in overall urbanization levels is also reflected in the changing distribution of the urban population. The urban populations of the three regions in the north and east declined from 68 percent of

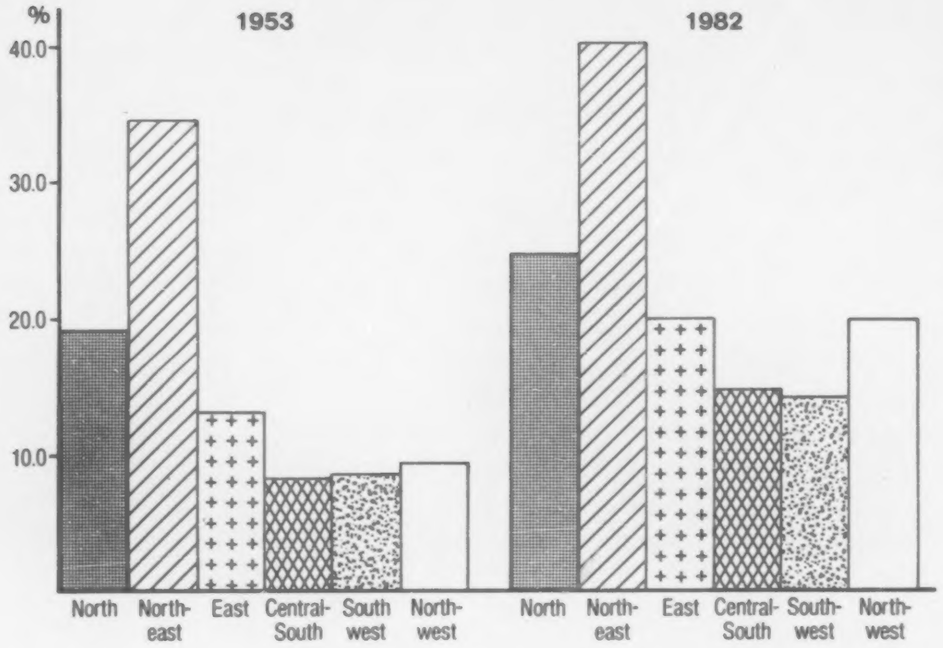

FIGURE 3. % urban of each region's total population: China, 1953 and 1982

the country's total to 61 percent, while that of the Central-South increased from 17 to 20 percent, and that of the two western[8] regions increased from 15 to 18 percent of the total. This redistribution reflects the effects of differential growth rates among the regions. As the percentage of change in Table 3 shows, in all regions the urban population grew at faster rates in this 29-year period than did China's total population, but the extent of the differential varied. For the total population, the 29-year period witnessed regional growth ranging between 64 and 108 percent, with the Northeast being highest and the East and Southwest the lowest. During this same time, however, the urban population grew by between 132 and 318 percent, and the growth was especially great in the Central-South and the west. Thus, while the urban population increased by somewhat more than 100 percent in the regions of the North and East, it grew by as much as

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[8] "Western" and "west" refer to the combined Southwest and Northwest regions.

224 percent in the Central-South and by as much as 318 percent in the Northwest. Policies designed to relocate industry and develop urban places in inland areas obviously had an impact.

These regional data show that the distribution of the urban population between cities and towns varies as well (Table 2, lower panel).[9] The Northeast region, which was considerably developed during the Japanese occupation, has undergone further substantial industrial development since then. It is the most urbanized region of China, with more than four of every 10 persons living in urban places and about three of these four living in cities. Not surprisingly, the next most urbanized is the North, which includes two of China's three municipalities—Beijing and Tianjin; one-fourth of its population is urban and by far the greatest proportion of these live in cities.

The urbanization levels in the remaining four regions of the nation cluster within the range of 15–20 percent. Somewhat surprisingly, the East, which includes Shanghai, and the Northwest, which encompasses the provinces along the Soviet border, have equal urbanization levels and virtually the same distribution pattern of the urban population between cities and towns, a ratio of more than 2:1. The reasons for these similar patterns are, however, quite different. In addition to the major metropolis of Shanghai, the East includes a number of older coastal cities; its urban population totals 59 million persons, but it also has very densely populated rural areas. By contrast, urban places in the Northwest consist much more of recently developed industrial cities and a relatively sparsely settled terrain. The total urban population (about 14 million people) is only about 23 percent as large as that of the East region; in fact, with its 59 million urbanites, the East's urban population is not far below the total population of the Northwest. The lowest levels of urbanization characterize the Central-South and Southwest regions of China, with 15 percent of their populations in urban places, divided in a ratio of about 2:1 between cities and towns.

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[9] Unfortunately, the published results of the 1982 Chinese Census (the 10 percent tabulations), the most comprehensive set of information yet available from the census, do not provide a breakdown of the urban population by cities and towns for each of the 29 provinces, municipalities, and autonomous regions. This information was published in the earlier manual tabulations from the 100 percent count (SSB, 1982), but these differ slightly from the results of the 10 percent sample. The manual count, for example, shows 14.4 percent of the total population living in cities and 6.2 percent in towns; the sample data show this distribution to be 14.5 and 6.1 percent, respectively.

TABLE 4. Number of cities and towns, by region, and average population size

Region	Number		% distribution		Average size (in 1,000s)	
	Cities	Towns	Cities	Towns	Cities	Towns
North	30	221	12.7	8.3	807.8	23.6
Northeast	34	295	14.4	11.1	762.5	38.6
East	60	752	25.5	28.2	683.9	24.9
Central-South	64	646	27.1	24.2	422.9	23.0
Southwest	25	539	10.6	20.3	659.1	14.4
Northwest	23	211	9.7	7.9	432.4	18.7
Total PRC	236	2,664	100.0	100.0	613.0	23.2

SOURCE: State Statistical Bureau (1982:Table 5).

Distribution of Urban Places

Still another perspective for evaluating the regional differences in urbanization is to examine the location of the cities and towns themselves rather than the populations living in them. The data in Table 4 present the statistics for the 236 cities and 2,664 towns that constitute the urban units of the 1982 Census. The results differ somewhat from the patterns indicated by the distribution of urban population. Judging by the number of cities, regardless of size, the Central-South region is the most urbanized, with 27 percent of China's cities located there; it is followed very closely by the East, which accounts for just more than one-fourth of the cities. No other region contains more than 15 percent, and the Northwest has less than 10 percent of China's cities. Again, the influence of the coastal areas is clear. By contrast, towns are much more widely dispersed. The East region and the Central/South reverse the order, but the difference between the two is not great; together they account for 52 percent of all of China's towns, just as they accounted for slightly more than 52 percent of its cities. However, the Southwest is also prominent among the regions for a substantial percentage of towns, probably reflecting a relatively high population density coupled with a relatively low proportion of cities, so that towns are relied on more heavily for commercial functions.

Considerable regional variation exists for the average population size of cities and towns in the respective regions (Table 4). For China as a whole, the 236 cities averaged a population of 613,000 people in 1982, but this average ranged from a high of 807,800 for cities in the North to averages of 432,400 in the Central-South and 422,900 in the Northwest. While the high averages of the North and the East are not surprising, given the location of many of the major metropolises in these regions, the unusually high average for the Northeast, reflecting the considerable industrial/urban development, is noteworthy.

The towns in China obviously represent a category in themselves, averaging only about 23,000 people. The Northeast is outstanding; its average of 38,000 far exceeds that of China as a whole. The North, the East, and the Central-South regions vary minimally with respect to the average size of towns, around 24,000; for the more remote regions in the country–the Southwest and the Northwest–the averages are below 20,000. This pattern, too, may be related to the smaller number of cities in these comparatively large geographic areas. Towns in these regions must therefore serve multiple functions, which is accomplished through many small towns scattered over a wide area. Further insights into these patterns may be gained through examination of statistics on the distribution of cities by size.

Distribution by size class of cities

National Patterns

Between 1953 and 1982, the number of cities in China increased from 173 to 236. The comparative distribution of these cities by size class[10] (Table 5) clearly indicates a substantial upward shift to larger size categories. In 1953, four of every 10 cities had less than 100,000

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[10] The statistics by city size class are based on Table 11 of the 10 Percent Sample of the 1982 Census (SSB, 1983b:28–211). In this table, data on individual cities and counties are presented by province with subdivisions for inner cities and suburban counties where applicable. These individual city data therefore provide the basis for the aggregations by city size class. The data in Table 11 of the 1982 Census volume have been corrected according to information received after publication. Three counties in Jiangxi Province were incorrectly identified as cities and one city in each of the Hunan, Yunnan, and Shaanxi Provinces was classified as a county in the published data. Tables 5–7 of this report incorporate the corrected data. Despite these corrections, a discrepancy (567,990) still exists between the total population in inner cities based on the aggregate data from Table 11 and the totals published in other tables (e.g., Table 20) of the census report.

TABLE 5. Distribution of cities and of city population, by size class, 1953 and 1982, and % change

Size class	1953 Number	1953 % distribution	1982 Number	1982 % distribution	% change 1953–1982
Cities					
5.0 million and more	1	0.6	3	1.3	+200.0
2.5–4.99 million	2	1.1	5	2.1	+150.0
1.0–2.49 million	6	3.5	30	12.7	+400.0
500,000–999,999	16	9.2	46	19.5	+187.5
200,000–499,999	28	16.2	85	36.0	+203.6
100,000–199,999	49	28.3	49	20.8	0
Less than 100,000	71	41.1	18	7.6	−74.7
Total PRC	173	100.0	236	100.0	+36.4
City population (in millions)					
5.0 million and more	6.2	11.8	17.0	11.7	+174.2
2.5–4.99 million	5.5	10.5	15.6	10.8	+183.6
1.0–2.49 million	9.3	17.8	42.6	29.4	+358.1
500,000–999,999	11.3	21.6	32.8	22.7	+190.3
200,000–499,999	8.5	16.2	28.0	19.3	+229.4
100,000–199,999	7.2	13.7	7.4	5.1	+2.8
Less than 100,000	4.4	8.4	1.4	1.0	−69.2
Total PRC	52.4	100.0	144.8	100.0	+176.3

SOURCES: 1953 data based on Ullman (1961). 1982 data based on State Statistical Bureau (1983b).

inhabitants and an additional 30 percent had between 100,000 and 200,000 (Ullman, 1961:10). Compared with 1953, when there were 71 cities under 100,000, only 18 cities under 100,000 were identified in 1982. That number represents 7.6 percent of all cities. Even if cities in the next largest size class (100,000–200,000) are included, the percentage of small cities remained below one-third of the total, compared with two-thirds 30 years earlier. In fact, with the exception of the size groups under 200,000, every size category had a greater absolute number of cities in 1982 than in 1953. All but one category increased about threefold in number; cities ranging in the 1 million to 2.5 million category were five times more numerous in 1982 than in 1953. Whereas China had only nine million-plus cities in 1953, it had 38 such cities in 1982, eight of which had 2.5 million or more

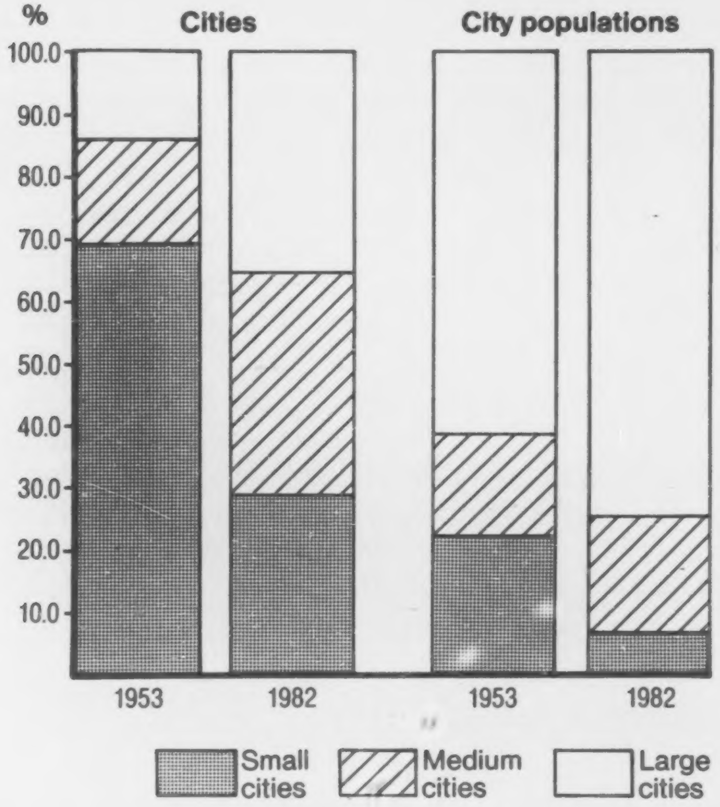

FIGURE 4. Distribution of cities and city populations, by city-size class: China, 1953 and 1982

inhabitants. Although the three municipalities–Shanghai, Beijing, and Tianjin–dominated the urban hierarchy of China, the greatest proportion of Chinese cities was in the medium-sized category: more than one-third of the cities had between 200,000 and 500,000 residents (Figure 4).

The distribution using cities as units of analysis does not fully reveal the size category in which the urban population is concentrated. Examination of the distribution in 1982 of the city population by city size shows that the metropolises dominated the urban hierarchy even more than their numbers would indicate (Table 5). Whereas cities of a million or more constituted only 16 percent of all cities, they accounted for just more than 50 percent of all of China's population living in cities, and almost half of these people lived in cities of 2.5 million persons or more.[11] Medium-sized cities, by contrast, while accounting for just more than one-third of the total number of cities in China, encompassed only 19 percent of the population living in China's cities. An even greater discrepancy characterizes the smaller cities which, while accounting for 28 percent of all cities, contained only 6 percent of the city population. Clearly, the city population of China is unequally distributed by size category and helps to explain why government policy invokes strict control on the further growth of big cities while encouraging the growth of small cities and towns to serve both as alternative centers of settlement and as linkages between the larger cities and the countryside (Pannell, 1984:210–13).

Restricting the assessment of distribution by size category to cities omits the populations living in towns, which are also part of the urban hierarchy. The 2,664 places classified as towns accounted for over 90 percent of all urban places in China and for almost 30 percent of the population in urban places. Although the published census statistics do not include data on the size of towns, such information is provided in a report by Ding (1984), who has described the urban/rural distribution of China's population using 1982 Census results. These data show considerable variation in the size of places designated towns. Of the 2,664 towns, 26 had more than 100,000 residents and an additional 231 had populations of 50,000–100,000. Such places are similar in size to the 66 small cities of less than 200,000 population. On the other hand, more than 90 percent of China's towns had populations under 50,000, and 58 percent were reported as having under 20,000. If China should succeed in its efforts to develop a significant number of new towns as urban growth centers and to increase the population living in existing towns so that these places are able to absorb a substantial proportion of the agricultural surplus labor, the predominance of these smaller places in the urban hierarchy, judged both by their numbers and by the percentage of urban population living in them, should increase significantly in the years ahead.

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[11] Cities may be classified into three categories: (1) big cities have 500,000 or more population with those of 1 million or more considered metropolises; (2) medium cities range between 200,000 and 499,999; (3) small cities have 50,000 to 199,999 inhabitants.

Regional Distributions

The distribution of cities by size for each of the regions also points to considerable regional variation in the urban hierarchy. Two of China's three municipalities are in the North, separated from each other by only a short distance. The third, Shanghai, is in the East. Neither of these two regions has a city in the next category, 2.5–5 million people. The five cities in this class are distributed among three other regions–the Northeast, the Central-South, and the Southwest. Thus, all regions but the Northwest have at least one city of 2.5 million or more population. The Northwest's largest city, Xian, had only 2.2 million people in 1982. The cities in each of the other classes are distributed among all regions.

When comparisons are made in terms of big, medium, and small cities (Table 6), for China as a whole, the big- and medium-sized city categories each contain about 36 percent of all cities; small cities constitute 28 percent. However, this pattern does not extend to each region. In the North and the Southwest, one-third of the cities fall into the big city category, about one in four are medium-sized, and one quarter are small cities. The Northeast has a conspicuously larger proportion (59 percent) of big cities than any other region and the smallest proportion (15 percent) of small cities. The East also has a relatively larger proportion of big than of medium and small cities. The reverse situation characterizes the Central-South region, where 41 percent of the cities are in the small-city category, and only 22 percent are big cities. Like the Central-South region, the Northwest also has a relatively smaller proportion (26 percent) of big cities, but the remainder are almost equally divided between the other two size categories, with a slightly lower percentage in small cities.

The population distributes differently among size categories by region than do the cities. In all regions, 60 percent or more of the city population resides in big cities. For all but the Central-South and the Northwest regions, the percentage is above 75 percent, and for the Northeast it is 87 percent. All regions have far more of their city populations living in medium rather than small-sized cities, but in only two regions–the Central-South and the Northwest–is it as high as one-fourth. These two regions are also the only ones to have at least 10 percent of their city populations in small cities. Despite the stress in the 1980s on small places, in China as a whole and in most regions,

TABLE 6. Distribution of cities and of city population, by size class and region, 1982

Size class	North	Northeast	East	Central-South	Southwest	Northwest	Total
Cities							
Big cities	33.3	58.8	43.4	21.8	32.0	26.1	35.6
Medium-sized cities	40.0	26.5	33.3	37.5	44.0	39.1	36.0
Small cities	26.7	14.7	23.3	40.7	24.0	34.8	28.4
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total number	30	34	60	64	25	23	236
City population							
Big cities	79.2	86.6	76.8	59.3	76.1	62.3	74.6
Medium-sized cities	16.5	11.5	17.7	28.8	19.2	27.7	19.3
Small cities	4.3	1.9	5.5	11.9	4.7	10.0	6.1
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: State Statistical Bureau (1983b).

small cities still account for only a low percentage of the total city population.

Changes in Big City Distribution, 1953–1982

Given China's concern with controlling the growth of big cities, particular attention to this size category (500,000 and more) seems in order. Such a focus provides further insights into the changing patterns of urbanization between the 1953 and 1982 censuses. At the time of the 1953 Census, China had 25 big cities (Ullman, 1961), compared to the 85 identified in the 1982 Census. Although there had been a sharp rise in the number of big cities, their geographic distribution did not change substantially. In 1953, 17 of the 25 cities (68 percent) were located in the North, Northeast, and East regions and only four, or 16 percent, were in the west; the remaining four were in the Central-South region. By 1982, the number of big cities in the three northern and eastern regions had more than tripled to 57, but still constituted 67 percent of all the big cities in China. Moreover, the west and the Central-South each still contained 16 percent of the big cities. Overall, therefore, while these three decades witnessed significant increases in the number of big cities in each region, these data on all big cities point to minimal change in their regional distribution, suggesting that the development of new big cities inland has been balanced by big city growth in the earlier developed coastal areas.

If only million-plus big cities are considered, some change in the regional distribution becomes apparent. In 1953, two-thirds of the million-plus cities were in the North, Northeast, and East; by 1982, these regions still accounted for 71 percent. But whereas the west had only three such cities in 1953 (11 percent of the total million-plus cities), it had 11 in 1982, which accounted for 18 percent of all such cities in China. The Central-South region gained only two million-plus cities in these three decades, halving its percentage of China's total from 22 to 10 percent. The overall impression from these comparative data for 1953 and 1982 is that both eastern and western China have been characterized by big city growth, with the western region showing more change in the relative number of very big cities.

The changing distribution by size category of China's big cities has involved considerable shifting in size classification of individual cities–shifts that are marked by net gains and losses to individual categories. Of the 85 cities of 500,000 and more, only three were in the same size class in 1982 as they had been in 1953; these were Shanghai in the five million-plus group, Nanjing in the 1 million to 2.5 million class, and Wuxi, which remained in the 500,000 to 1 million group. Each of the other 82 cities shifted and all moved upward, including Beijing and Tianjin, which shifted from the 2.5–5 million class to the 5 million-plus class. These data also indicate that of the 60 big cities in 1982 that had fewer than 500,000 residents in 1953, 14 grew to more than 1 million people. Most of the "newcomers" to big-city status–40 of the 60 additions–were located in the three regions of the North, Northeast, and East. However, 10 big cities were added to the four big cities in the two western regions in 1953, reflecting the concerted efforts to spread major urban centers to these inland regions of China.

Further insights into the extent of change in China's urban hierarchy can be obtained by comparing the 25 largest cities and their rank size in 1953 with the 25 largest in 1982. Each of the 25 largest cities in 1953 had at least 500,000 population. In 1982, each of the largest 25 cities had more than 1.2 million inhabitants; 18 of these were among the 25 most populous in 1953, and their comparative rank had changed minimally. In fact, the Spearman rank correlation between the two sets was .978. All seven of the 1953 largest cities not qualifying in 1982 were located in the eastern half of China; of the seven newcomers to the list, three were situated in the western half of the nation. These data again point to a limited shift westward in the location of big cities.

Primacy

Concern with urbanization in developing countries has focused not only on the overall rate of urbanization and urban growth but also on the nature of the urban hierarchy and the extent of spatial polarization as evidenced by conditions of primacy. In a number of developing countries, including some in Asia, the major city–usually the national capital–has far outpaced other cities in its growth rate; it encompasses a disproportional share of the nation's economic, political, cultural, and educational activities, and it is the recipient of a large share of total investment both from the national government and from overseas. The same locations have very often been characterized by high degrees of social and economic inequality among their residents, even while they remain the goals of a large number of prospective migrants from rural areas and small towns because these cities are viewed as providing far greater opportunities than other locations.

Chinese planners and policy makers have been cognizant of this potential situation and concerned both with existing conditions in China's big cities and the possibility that uncontrolled growth of big cities would lead to problems similar to those characterizing many other primate cities in Asia and elsewhere. In response, during the 1960s and 1970s, the Chinese government attempted to develop policies designed to promote the wider income distribution, reduce regional inequalities, and create a more balanced urban hierarchy, which would lead to a greater decentralization of economic activities. In doing so, the intention was to slow population growth in the largest cities, while allowing continued increases in medium-sized and smaller urban centers. The primacy of the larger cities would thereby be reduced, and the growth of towns and the smallest cities would lead to more effective linkages to rural areas and expedite the modernization and development of the countryside. Given this general program, one would expect that the primacy levels characterizing China in 1953 would have been considerably reduced by 1982.

Because China is so vast and because activities are still largely organized in terms of provincial and regional networks, a fair assessment of the extent of primacy should be undertaken on regional and provincial levels rather than on the national level itself.

Measurement of the degree of primacy in 1982 relies upon census data on the size of the cities (using inner city data only) to construct a four-city primacy index. This index compares the size of the leading city in the country, in the region, and in the individual provinces, respectively, with the size of the next three largest cities in the same geographic grouping. If the cities conform to the rank size rule, then the resulting index will be approximately 100 since, according to the rank size rule, the second city should approximate one-half of the first, the third city one-third of the first, and the fourth city one-fourth of the first; that is, the second to fourth cities together should approximate the size of the first city. An index above 100 points to primacy and one below 100 suggests that the next few cities are well above what one would expect according to a rank size "normal" distribution.

The expectation, based on the earlier review of the urban hierarchy, is that China as a whole will show no indication of a primate condition, but that primacy will be characteristic of certain regions and even more so in selected provinces (see also Yeh and Xu, 1984). The data confirm this expectation (Table 7). The index for China as a whole is only 43.0, suggesting that the largest cities in China do not differ much from each other in size and that no single city dominates the urban scene, as indexed by population size. This is not surprising, given the urban history of China as well as the total size of the country. This conclusion is confirmed even if primacy is measured in terms of an 11-city index (38.0) instead of a 4-city index (43.0).[12]

Somewhat surprisingly, the 4-city primacy index for each of the six regions also points to a general absence of primacy conditions, with the sole exception of the East region where Shanghai is so predominant that it produces an index of 111.4. When the index for the East region is based on 11 cities rather than four, however, it drops to 90.5, suggesting that in relation to the larger urban structure, even Shanghai is not exceptionally large. For all other regions, the 4-city primacy index is well below 100. The same conclusions are reached with the 11-city index, as the data in Table 7 show. Overall, these indexes

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[12] The 11-city primacy index compares the largest city in a given geographic area with the 10 next largest cities. In China it can be used only on the national or regional level, since many provinces do not have 11 cities.

TABLE 7. Primacy indexes, by region and province, 1982

Region and province	4-city primacy index	11-city primacy index
China	43.0	38.0
North Region	66.6	77.9
Beijing	—	
Tianjin	—	
Hebei	53.8	
Shanxi	92.4	
Inner Mongolia	81.9	
Northeast Region	68.6	61.9
Liaoning	102.2	
Jilin	68.4	
Heilongjiang	91.6	
East Region	111.4	90.5
Shanghai	—	
Jiangsu	93.2	
Zhejiang	38.7	
Anhui	57.3	
Fujian	84.3	
Jiangxi	58.0	
Shandong	56.7	
Central-South Region	58.2	58.6
Henan	67.5	
Hubei	309.1	
Hunan	53.4	
Guangdong	160.3	
Guangxi	70.6	
Southwest Region	44.4	47.9
Sichuan	61.8	
Guizhou	110.8	
Yunnan	170.5	
Tibet	—	
Northwest Region	75.5	77.0
Shaanxi	177.7	
Gansu	279.3	
Qinghai	—	
Ningxia	—	
Xinjiang	89.2	

SOURCE: State Statistical Bureau (1983b).

therefore suggest that on a regional and a national level, little evidence of primacy exists, with the possible exception of the East region.

When the level of comparison is reduced to the provinces and autonomous regions, conditions of primacy manifest themselves in selected areas. (The primacy index could not be calculated for Beijing, Tianjin, and Shanghai since each city is equivalent to a province and therefore has no smaller cities within the same political unit. Nor was the index constructed for Tibet, Qinghai, and Ningxia because the nature of the urban structure in these frontier provinces did not lend itself to such calculations.) No evidence of primacy emerges from the data for the provinces in the North, the East, or the Northeast; in the latter, only Liaoning Province shows a slight indication of primacy, but the index of 102.2 does not point to strong primacy. In fact, in most of the provinces in these three regions, the index is considerably below 100. In the eastern provinces of China, including those which are most densely settled, the larger cities apparently do not dominate the urban hierarchy, as judged by size alone. Indeed, the data suggest that these three regions of China may be characterized by an urban hierarchy that conforms closely to the goals that national policies advocate.

In contrast, in the Central-South region and in the two western regions, six of the 11 provinces for which primacy indexes were calculated have indexes above 100, and usually considerably so. Hubei's high index of 309 reflects the dominance of the industrial city and transport junction of Wuhan, which numbered 3.3 million people in 1982. In Guangdong, Guangzhou continues to dominate the urban scene, probably reflecting its importance vis-à-vis Hong Kong and as a port of entry for China. The high primacy rate characterizing the four other provinces is undoubtedly related to their less developed conditions. In the Northwest, Lanzhou in Gansu Province is particularly noteworthy among cities whose population has grown rapidly as a result of efforts to relocate industry from the coastal regions to the inland provinces; it dominates the province with an index of 279. And in Shaanxi Province, the ancient city of Xian has taken on increased importance as a provincial and regional center as reflected in its primacy index of 178.

Previous research on the changing system of Chinese cities (Chang, 1976) has documented that one of the most remarkable features of China's urban development since 1949 has been the rapid growth of provincial capitals. Based on comparisons of the census enumeration of 1953 and estimates of provincial capital populations in 1970, Chang found that 10 of 25 capital cities of provinces and autonomous regions had more than doubled their populations, and half of the 10 had been tripled. A number of these rapidly growing cities are located in frontier regions; many of the other older capitals had undergone substantial growth as the result of improved linkages to national transportation networks, improvements in infrastructure, and development of heavy and light industries. The net effect of these improvements, Chang observed, was an increase in the urban primacy of many of the provincial-level capital cities in relation to other cities within the province.

In his analysis of the provincial capitals, Chang calculated a 2-city primacy index for 1970, based on estimates of city size for that year, and also made some comparisons with the index of 1949. His evaluation indicated that "primacy declined in well-developed provinces and it increased in less developed provinces" (Chang, 1976:404). In particular, he found that in 1970 three of the four capital cities with a primacy index greater than 10 (i.e., the cities were more than 10 times the size of the second city) were located in inland provinces of the western regions. The three—Lanzhou (Gansu), Xining (Qinghai), and Kunming (Yunnan)—were all newly emerging industrial or transport centers as was the fourth city, Wuhan, which had become a key industrial center at the juncture of the Yangtze and Han Rivers in Hubei Province of the Central-South region. Of these four, only Wuhan had had an index greater than 10 in 1953; by 1970, it was 12.8. Lanzhou's index had increased from 4.7 to 19.3, and Kunming's from 4.4 to 14.7. Overall, for the 23 provinces and autonomous regions for which comparisons could be made between 1953 and 1970, 15 had higher indexes in 1970 than in 1953, and only eight had lower ones. Xining's index was not measurable in 1953 since no second municipality existed in Qinghai Province at that time.

If the 2-city index is calculated for the 25 provincial capitals in 1982 (Tibet was not included in the 1970 analysis), the results show that no city had an index greater than 10, suggesting higher growth rates of smaller cities in China between 1970 and 1982; in fact, the index is lower in 20 of the 25 provinces and autonomous regions that can be compared between 1982 and 1970, and often the differences are considerable. For example, for Lanzhou, which had the highest index in 1970, it had declined from 19.3 to 7.0; for Wuhan, from 12.8 to 8.7; for Guangzhou, from 8.3 to 3.3. For Xining it decreased from 16.7 to 9.6; its index was the highest of all capitals in 1982. Further attesting to the lower levels of primacy is the fact that the number of capital cities with indexes less than 2.0 increased from nine in 1970 to 15 in 1982. Whereas four capital cities in 1970 were estimated to have indexes below 1.0, indicating they were exceeded in size by another city in the province, this was true of seven capitals in 1982.

While primacy had declined over these 12 years, the newly industrializing inland provinces generally continued to display the highest indexes. In fact, the rank correlation between the primacy indexes in 1970 and 1982 was .70, suggesting comparatively little change in ranking; the major changes, therefore, seem to be the general reduction in the absolute levels of primacy rather than changes in the comparative rankings in primacy conditions among provinces. Interestingly, a similar conclusion emerges from a comparison between the rankings in 1982 with those in 1953; for the 23 provinces and autonomous regions between which comparisons can be made, the rank correlation is .67.

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE URBAN AND RURAL POPULATIONS

The 10 percent sample of the 1982 Census (SSB, 1983b) has made available limited statistics on the demographic and economic characteristics of the populations living in cities, towns, and rural areas of China. These include information on sex and age composition and on the occupational and industrial composition of the labor force. Although the latter are not cross-tabulated by age, they nonetheless provide important insights on urban-rural differences in population composition and the extent to which towns share the same urban characteristics as cities.

Age and sex differentials

Examination of the age distributions (Table 8) reveals a quite marked difference in age composition between urban and rural places, but only minimal differences between the populations living in cities and towns. The much younger age of the rural population is evidenced in a median age of 21.5 years compared with 26.0 for cities and 25.2 for towns. Of the total rural population, 35 percent are less than 15 years of age, reflecting in part the higher fertility that has characterized rural

TABLE 8. % distribution, by age and median ages, by sex, and by urban/rural residence

Age group	Males	Females	Total	Males	Females	Total
	Cities			Towns		
0–4	3.9	3.6	7.5	4.2	3.9	8.1
5–9	4.1	3.9	8.0	4.7	4.3	9.0
10–14	5.4	5.1	10.5	5.9	5.5	11.4
15–19	6.2	5.8	11.9	6.4	6.0	12.4
20–24	5.0	4.7	9.7	4.5	4.2	8.7
25–29	5.7	5.3	11.1	5.5	4.8	10.3
30–34	4.3	3.8	8.1	4.6	3.7	8.3
35–39	3.1	2.8	5.9	3.7	2.7	6.4
40–44	3.0	2.8	5.8	3.5	2.6	6.1
45–49	3.1	2.7	5.9	3.2	2.3	5.5
50–54	2.6	2.2	4.7	2.6	1.8	4.3
55–59	1.9	1.7	3.5	1.7	1.3	3.0
60–64	1.4	1.3	2.7	1.2	1.1	2.3
65–69	1.0	1.0	2.0	0.8	0.9	1.7
70–74	0.6	0.7	1.4	0.6	0.7	1.3
75 & older	0.5	0.8	1.3	0.5	0.8	1.2
Total %	51.8	48.2	100.0	53.5	46.5	100.0
Median age	26.0	26.1	26.0	26.0	24.4	25.2
	Rural			Total PRC		
0–4	5.1	4.8	9.9	4.9	4.6	9.5
5–9	6.0	5.7	11.7	5.7	5.3	11.0
10–14	7.1	6.7	13.7	6.7	6.4	13.1
15–19	6.4	6.2	12.6	6.4	6.1	12.5
20–24	3.5	3.4	6.9	3.8	3.6	7.4
25–29	4.5	4.3	8.8	4.8	4.5	9.2
30–34	3.6	3.4	7.0	3.8	3.5	7.3
35–39	2.7	2.5	5.2	2.8	2.6	5.4
40–44	2.4	2.1	4.6	2.6	2.2	4.8
45–49	2.3	2.1	4.4	2.5	2.2	4.7
50–54	2.0	1.9	3.9	2.2	1.9	4.1
55–59	1.7	1.7	3.4	1.8	1.6	3.4
60–64	1.4	1.4	2.8	1.3	1.4	2.7
65–69	1.0	1.1	2.2	1.0	1.1	2.1
70–74	0.7	0.8	1.5	0.5	0.8	1.4
75 & older	0.6	0.8	1.4	0.5	0.9	1.4
Total %	51.0	48.9	100.0	51.4	48.7	100.0
Median age	21.4	21.7	21.5	23.0	22.9	22.9

SOURCE: State Statistical Bureau (1983b).

compared with urban places in China. By contrast, the equivalent percentage in cities and towns is 26.0 and 28.5 percent, respectively. By age group 15–24, minimal differences are seen between urban and rural locations. However, in the peak labor force ages (25–44) the differences are sharp; whereas rural areas have only one-fourth of their populations concentrated in the lower middle-age group, this is true of 31 percent of the populations living in urban places. This higher concentration of persons of middle ages extends, although to a lesser extent, to the 45–64 age group: Cities have 17 percent of their population in this age range, towns 15 percent, and counties just under 15 percent. In China as a whole, the percentage of the aged population is still low, with just under 5 percent aged 65 and older. The percentage of aged is slightly higher in rural areas than in urban places, and within the urban group it is lowest in the towns.

Overall, therefore, these data suggest that as a combined result of higher fertility in rural places and probably selective movement to urban places—both by those seeking higher educations and by those moving for economic reasons—observable, and, at times, striking differences exist in age composition between urban and rural populations. The differences tend to be minimal between cities and towns, lending support to the conclusion that the populations of towns have taken on some of the demographic characteristics of an urban place.

The age-sex distributions can be used to compare the sex composition of the populations in the three urban-rural categories. According to the 1982 Census, China has an overall sex ratio of 105.5, which varies substantially by age group (Table 9). The 0–4 age group has an excess of males (107.2), which is slightly higher than in most countries. As is generally true, the sex ratio begins to decline with succeeding ages, but contrary to general patterns it does so only until the 20–24 age group when it reaches a low of 103.8, then it rises continuously to a peak of 114 at ages 40–44. The low for the 15–24 age range reflects the omission from the age data of men and women in the armed forces; adjustment (Banister, 1984:Table 1) raises this ratio to about 106. Whether the rising sex ratio beyond age 29 reflects earlier sex-selective differentials in mortality—possibly including the effects of female infanticide and differential health care of men and women—cannot be ascertained here.[13] Following this peak, it resumes the decline, with

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[13] Ansley Coale (1984) notes the anomalous increase in the sex ratio that characterizes the birth cohorts of about 1940 through 1951–52 and suggests

TABLE 9. Sex ratio of population, by age and urban/rural status

Age group	Cities	Towns	Rural areas	Total (unadjusted for military)	Total (adjusted for military)
0–4	107.0	107.8	107.1	107.2	107.2
5–9	106.8	107.5	106.1	106.2	106.2
10–14	106.8	107.3	106.0	106.1	106.1
15–19	106.8	106.7	102.8	103.5	105.0
20–24	107.2	107.8	102.6	103.8	107.4
25–29	107.6	113.8	105.8	106.6	108.8
30–34	111.6	126.8	105.9	108.2	109.1
35–39	113.1	140.0	108.6	111.3	112.4
40–44	109.1	135.3	113.4	114.2	115.3
45–49	113.0	138.4	109.8	112.2	112.2
50–54	119.6	145.9	107.7	111.8	111.8
55–59	113.1	126.0	104.3	106.6	106.6
60–64	106.3	108.2	98.8	100.3	100.3
65–69	97.1	92.4	90.8	91.7	91.7
70–74	82.8	81.4	81.2	81.4	81.4
75–79	67.4	65.9	68.8	68.4	68.4
80–84	55.6	56.9	57.6	57.3	57.3
85 & older	41.3	44.2	45.2	44.5	44.5
Total	107.6	115.1	104.4	105.5[a]	106.3

a. Military population includes 4,070,763 men and 167,447 women. These have been allocated to ages 15–44. See Banister (1984, Table 1).

the 60–64 age group being the last to have an excess of males over females. Thereafter, the aged population is characterized by a continuous and quite rapid rise in the proportion of females, so that by age 85 and older only 44 males remain for every 100 females. To what extent do the sex ratios in cities, towns, and rural areas follow the same pattern?

The three residence categories of China do not display similar sex ratios, and the differentials are particularly sharp between the towns on the one hand and the cities and rural counties on the other. Overall,

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that they experienced higher female than male mortality, contrary to the usual greater viability of females. He also notes the precipitous decline in the proportion of males in the older age groups and suggests that this is attributable to an extraordinary excess of mortality for males at older ages.

the rural counties have the lowest sex ratio, 104.4, followed closely by the cities with 107.6. The number of males in towns is quite excessive as indicated by a sex ratio of 115.1 men per 100 women. The reasons for this become clearer upon examination of the age specific sex ratios. Minimal differences exist among the three residence categories for the age groups under 15. Beginning with age 15, however, and, with rare exception, continuing to age 65–74, the sex ratios in cities are higher than those of the rural counties, although only slightly so up to age 30.[14] Between age 30 and age 70, however, the discrepancy is considerable, with the sole exception of the 40–44 age group. Since it seems unreasonable to assume that the death rates for females in these cohorts are significantly higher in cities than in rural areas, the more likely explanation for the difference is the cumulative effects of sex-selective migration in the age groups associated with entrance into higher education but especially with movement for economic reasons. This interpretation is reinforced by the fact that for age 70 and older the sex ratios are quite similar for the cities and rural areas.

The sex ratios of the population living in towns, the other component of the urban population, are also above those of the rural population in age groups 15–69, and the differences between town and village become quite sharp. From a fairly close similarity at age 10–14, 107.3 compared with 106.0 in villages, the ratio rises to 140.0 for the age group 35–39 in towns, compared with only 108.6 for rural areas, and remains at about this high level through the 50–54 age group. Thereafter the sex ratios in towns begin to decline, even while remaining well above those of the rural counties for ages 55–64. It is only by age group 65–69 that minimal differences exist between towns and rural counties, and not before age 70 that the cities, towns, and rural areas closely resemble each other in sex composition. But between ages 25 and 59, the sex ratios for the town population are well above those of the comparable 5-year age groups in cities. In fact, for most of these age groups, the sex ratios of the cities more closely resemble the rural areas than the towns.

The particularly high sex ratios in the age groups 15–59 for the towns strongly suggests that these smaller urban places have been particularly attractive to male migrants from rural areas. It may be that the men have been allowed to move into these locations in response to demands for their services, while their wives and children have been denied urban registration and have therefore remained in the communes. Some men with urban (town) registration may also have married women from communes who were unable to move to the town, although this is probably not a common enough situation to explain the quite distorted sex ratios. When data on sex by age and marital status become available, further evaluation of these patterns seems appropriate. In the meantime, some insight might be gained by examination of the data on labor force, although regrettably these are not available by age, only by sex.

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[14] The ratios for cities in the 15–24 age group would be slightly higher if an adjustment was made for the military.

Urban/rural differences in the labor force

In view of China's efforts toward industrial development in cities and the development of small towns and rural areas, considerable interest focuses on the way in which these efforts have manifested themselves in the industrial and occupational composition of the labor force of cities, towns, and rural areas. Particularly relevant is the extent to which urbanization and rural development in China are associated with a decline in the numbers engaged in agriculture relative to the numbers in manufacture (United Nations, 1980:61).

Data from earlier censuses do not allow rural/urban comparisons, since the 1953 Census did not collect information on occupation or industry and the 1964 Census did not publish the data it had collected on occupation. Therefore, only the 1982 Census is available for a comparison of urban/rural differentials in occupational and industrial composition. Thus, any attempt to assess the impact of development on changing occupational and industrial composition must be approached cross-sectionally rather than longitudinally, operating under the assumption that cities are the most developed locations, towns are the next most developed, and villages (rural areas) are the least developed.

Also related to modernization and development in China is the extent and character of female employment and how they differ between urban and rural places. The assumption is that in rural areas and small towns, traditional values still strongly influence people's behavior, so that males are favored more strongly in rural areas than in cities in school recruitment, in the recruitment of nonagricultural laborforce, and especially in the selection of administrative leaders and managers. On this basis, it is expected that in all industrial and occupational categories, the sex ratios in employment are related to the urban character of places; that is, higher ratios of employed males to employed females would characterize rural areas compared to the cities.

According to the State Statistical Bureau (1983a:576–77), the labor force consists of all those who are employed and receive payment for their work or derive their income from business. This includes workers and staff members on the payroll of state or collective enterprises and those working in government agencies and people's organizations, individual workers, workers of collective-owned units, and commune members who regularly work and receive income therefrom. In the census, each individual 15 and older was classified as employed if he or she had a regular job on June 30, 1982, or a temporary job on that date, if it involved work for at least 16 days in June. People who had regular jobs but were not at their posts due to illness, holiday leave, study leave, or enterprise adjustment were enumerated as employed at their original work place (Population Census Leading Group, n.d.:23–25).

Based on this definition, the census presents data on both the occupational and the industrial composition of the labor force, subdivided by sex. In all, the resulting tabulations show 521.4 million–293.5 million men and 227.8 million women–to be in the labor force. Thus, 86.0 percent of all men age 15 and older and 70.1 percent of all women are labor force participants.[15]

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[15] The size of the labor force revealed by the census deviates substantially from that reported by the State Statistical Bureau for year-end 1981 and year-end 1982, which indicate 432.8 and 447.1 million in the labor force, respectively, equivalent to a July 1 average of 439.9 million. The 81.5 million discrepancy between this average and the 521.4 million reported by the census for June 30, 1982, suggests that quite different criteria were employed by the census in defining labor force participation. The differences extend to both urban and rural areas and to types of employment, so that the actual distributions by industry vary minimally between the two sets of data. Judith Banister (1984) has suggested several reasons for the differences, including coverage by the census of agricultural seasonal laborers (the census was taken in the summer), omission in the statistical records of temporary workers and of persons not officially recognized as workers by brigades or industrial units, and lack of clarity in the census of the category "non-working," especially for rural people, thereby leading to them reporting themselves as farmers or nonagricultural laborers. Until fuller information to assess the discrepancies becomes available, the reasons must remain speculative. Since the extent of the discrepancies may vary for urban and rural places (also not fully ascertainable), some caution

The census data point to differential rates of labor force participation in urban and rural places. In cities and towns, the number reported as employed amounted to 76.0 and 74.4 percent, respectively, of the population 15 years and older, but in the rural counties, the percentage reached 79.0 percent. Although the basic patterns were similar for men and women, the levels of participation differed. In cities and towns, about 83 percent of the men were reported with occupations, compared to only 68.6 and 64.6 percent of the women. In rural areas, the corresponding percentages were 87.0 for men and 70.8 for women. Lower percentages of women than men are therefore economically active in all places, and the sex differences in rates of participation are greatest, both in absolute and relative terms, for towns. Equally noteworthy are the lower labor force participation rates in both cities and towns compared to those in rural places. In towns and cities the rates for men are very similar; for women the rate for town residents is 4 percentage points below that of cities, suggesting lesser job opportunities for women in these smaller urban places. The overall close similarity in the general pattern between cities and towns again points to the underlying urban character of the towns.

The higher rates for both men and women in rural areas undoubtedly reflect the greater tendency of peasants to continue working beyond the official retirement ages of 60 for men and 55 for women. These differences, in turn, may relate to the fact that pension systems had not been institutionalized for peasants to any great degree by 1982 but were widespread for the urban labor force. Unfortunately, the census data on employment are not published separately by age for urban and rural places so that further testing of the reasons for the rural-urban differentials in participation rates is not feasible.

Before proceeding to comparisons of sex differences in labor force composition, attention turns first to urban-rural differences in the industrial and occupational composition of the labor force as a whole. Since this evaluation is only a small part of the present review of urbanization in China, only limited use will be made of the detailed data available from the census. In the published statistics, the eight major occupation groups are subdivided into 64 subgroups, and the 15 industrial categories are subdivided into 57 subgroups. This report will

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must be used in considering the patterns of employment for cities, towns, and rural places.

make use only of the major occupation categories, and has collapsed the industrial designations into 10 major categories.

Industrial Distribution of the Labor Force

According to the distribution of the employed population by industry for the urban and rural populations (Table 10), China is still largely a rural, agricultural nation. Three-quarters of its employed population is engaged in agriculture. Just less than 14 percent of the labor force is in industrial work and the remaining 12 percent is distributed among the balance of the other eight industrial categories. Most of these are in commerce, in science, education, and health care, and, to a lesser extent, in construction, transport and communication, and administration.

Since a high proportion of China's population is rural, it is not surprising that the distribution by industry for the rural labor force very closely replicates the national percentages. Almost nine of every 10 rural employed are engaged in agriculture. Of the remainder, half (6 percent of the labor force) are industrial workers.

Among the city labor force, 42 percent are engaged in industrial work and a substantial number, ranging between 5 and 7 percent, are in construction, transport and communication, commerce, and science, education, and health care. Surprisingly, 24 percent of the city labor force is reported as engaged in agriculture. One of the reasons for the high proportion of agricultural labor in the city population is the overbounding of a number of the larger cities, even exclusive of the suburban counties. As a result, some inner city districts include communes in which agricultural activities predominate.

Towns account for only 6 percent of China's labor force, but they provide an important link between the city and rural areas. Reflecting this role, the industrial structure of the towns' labor force is quite distinct from that of the city and the rural counties. Just more than one-third of the labor force are industrial workers, a proportion much closer to the city industrial distribution than to the rural. Agriculture accounts for 21 percent, which suggests that towns have a "more urban" industrial structure than cities. Again, the pattern also reflects the more restricted town boundaries, so that primarily agricultural areas cannot as readily be incorporated into towns. Peasants in agriculture are therefore included in the rural populations which constitute the town's hinterlands. On the other hand, the percentage of the labor

TABLE 10. Distribution of the employed population, by industry and urban/rural status, 1982

	Distribution by urban/rural status				Distribution by industry				
								Total	
Industrial categories	Cities	Towns	Rural areas	Total PRC	Cities	Towns	Rural areas	%	Number (1,000s)
Agriculture[a]	24.5	20.9	87.8	73.7	5.2	1.8	93.0	100.0	384,339
Industry[b]	42.4	37.3	6.1	13.7	48.2	16.9	34.5	100.0	71,451
Construction	6.9	5.3	1.1	2.2	48.6	14.7	36.8	100.0	11,711
Transport and communication	5.7	6.8	0.5	1.7	51.9	24.5	23.6	100.0	9,019
Commerce[c]	7.2	12.1	1.4	3.0	38.1	25.5	36.5	100.0	15,422
Management[d]	1.8	1.6	0.1	0.5	59.1	20.7	20.2	100.0	2,455
Science, education, and health care[e]	7.0	7.8	2.3	3.4	32.4	14.2	53.4	100.0	17,697
Finance and insurance	0.4	0.9	0.1	0.2	28.5	27.8	43.6	100.0	1,022
Administration[f]	3.9	7.2	0.6	1.5	40.1	29.3	30.7	100.0	8,014
Other	0.1	0.1	—	—	47.2	16.1	36.7	100.0	248
Total %	100.0	100.0	100.0	100.0	15.7	6.2	78.1	100.0	
Total number (1,000s)	81,762	32,424	407,192	521,378					521,378

SOURCE: State Statistical Bureau (1983b:Table 34).

a. Agriculture includes animal husbandry, forestry, and fishing.

b. Industry includes manufacturing, mining, and production of power, gas, and pipewater.

c. Commerce includes trade, storage, and catering.

d. Management refers to residential buildings and public utilities.

e. Science, education, and health care includes culture and the arts, sport, scientific research, public health, and social welfare.

f. Administration refers to government agencies, party committees, and people's organizations.

force engaged in every other industrial category, with the exception of management and construction, is greater than that characterizing the city.

The important role that towns play in the national and local economies is suggested by comparing the percentage of the labor force engaged in particular industrial sectors who are residents of towns with the percentage that the town labor force constitutes of China's total employed population. Although China's towns encompass only 6 percent of the labor force, they account for one-quarter or more of all Chinese engaged in transport and communication, in commerce, in finance and insurance, and in administration. They also account for as many as 20 percent of those engaged in management and about 15 percent of those in construction and industry. These data suggest that Chinese towns are beginning to assume the importance which government policy has assigned to them in the urbanization and modernization process.

At the same time, the statistics on the rural population also provide strong evidence of change and development. While agricultural activity predominates, with 93 percent of all persons engaged in agriculture in China residing in rural areas, 30 percent or more of all resident workers engaged in industry, construction, commerce, finance and insurance, administration, and science, education, and health care reside in rural areas. Rural areas thus account for a substantial part of nonagricultural activities in China. This finding is supported by the report that in 1983 the value of industrial production of communes and production brigades amounted to 75.7 billion yuan, equal to 12 percent of total industrial production (*China Daily*, September 12, 1984). More than half of all workers engaged in science, education, and health care are located in rural areas; this further points to the efforts being undertaken to improve the quality of life in rural China, although rural-urban differences still remain substantial. Together with the developments noted for small towns, these features of the labor force of rural areas suggest that decentralization of nonagricultural activities had already occurred to a considerable degree by mid-1982 and that these developments have the potential of strongly affecting the urbanization situation in the future.

Occupational Distributions

The data from the census on the occupational distribution of the employed population (Table 11) lend weight to the conclusions reached on the basis of the examination of the distribution by industry. In rural areas, almost nine of every 10 persons are engaged in agricultural work, and most of the remainder are either workers in production and transport or in professional work. The remaining small percentage are distributed among the balance of the tertiary occupational groups—administrators, clerical, and trade and service workers. On the other hand, in cities the largest single category consists of production and transport workers, with almost half so employed; they are followed by agricultural laborers, who account for almost one-fourth of the city labor force; professionals rank next in frequency, constituting just more than 10 percent of the total. The remaining one-fifth of the labor force is distributed almost equally among the other four tertiary occupational categories, with service workers somewhat more prominent.

Virtually the same order of prevalence characterizes the occupational distribution for towns. Production and transport workers are the most numerous group, encompassing four of 10 in the labor force. As in the cities, these were followed in relative importance by agricultural workers, who account for one-fifth of the total. The balance of the labor force is represented by the diverse service (tertiary) categories of which professional workers constitute 13 percent, the largest group. As for the industrial distribution, these data on occupations strongly suggest the urban character of the population of towns and the role of the town as a center of both nonagricultural activities and service functions for the outlying areas.

This conclusion is given additional support when the occupational composition is viewed from the perspective of the distribution of each occupational category in China across cities, towns, and rural areas (Table 11). The data point again to the quite widespread distribution of occupations, with the exception of agricultural laborers of whom 93 percent are residents of rural areas. By contrast, less than half of all production workers live in cities, more than one-third are rural residents, and as many as 16 percent live in towns. Similarly, cities account for four of every 10 of those engaged in various broadly defined service functions, but rural areas also account for 25–40 percent

TABLE 11. Distribution of the employed population, by occupation and urban/rural status, 1982

Occupational categories	Distribution by urban/rural status				Distribution by occupation				
								Total	
	Cities	Towns	Rural areas	Total PRC	Cities	Towns	Rural areas	%	Number (1,000s)
Agricultural laborer	23.4	20.0	85.9	72.0	5.1	1.7	93.2	100.0	375,500
Production and transport worker	45.7	41.8	7.9	16.0	44.8	16.3	38.9	100.0	83,204
Professional	11.3	13.1	3.2	5.1	35.1	16.0	48.9	100.0	26,443
Leader	4.2	5.7	0.7	1.6	42.2	23.1	34.5	100.0	8,084
Clerical worker	4.0	5.2	0.4	1.3	48.9	25.2	25.9	100.0	6,767
Trade	4.2	6.8	0.9	1.8	36.5	23.5	40.0	100.0	9,428
Service	6.8	7.0	0.9	2.2	48.8	19.9	31.3	100.0	11,472
Other	0.3	0.3	–	–	57.2	20.9	21.9	100.0	480
Total %	100.0	100.0	100.0	100.0	15.7	6.2	78.1	100.0	
Total number (1,000s)	81,762	32,424	407,192	521,378					521,378

SOURCE: State Statistical Bureau (1983b:Table 35).

and towns account for the remaining 20–25 percent. This wide spread of service occupations throughout the three residential categories characterizes the subcategories of the broadly defined service group as well.

Sex Differentials in the Labor Force Structure

The foregoing analysis has not disaggregated the labor force by sex. Sex differentials are discussed first by examining the sex ratio for the industrial and occupational categories, by urban-rural status. As noted earlier, participation of women in the labor force is expected to increase as the level of urbanization rises; that is, to be higher in towns than in rural areas and higher in cities than in towns. Although the data do not support such an expectation (Table 12) for the labor force as a whole, the pattern does appear when each industrial/occupational category is considered separately.

Males clearly and substantially outnumber females in the total labor force in all three residential categories; yet the sex ratios for the city and the rural labor force are quite similar, with approximately 130 men for every 100 women. The differential is greater for towns, with 151 men for every 100 women. The excessive number of men in towns suggests strongly that the nature of industrial, commercial, and service work opportunities in these smaller urban places is still heavily sex-selective. On the other hand, the lower sex ratio in rural areas, as the following discussion documents, reflects the heavy participation of women in agriculture.

The sex ratios are by no means uniform for the different industrial and occupational categories. For the breakdown by industry, the closest similarity among the residence categories characterizes agriculture, where the sex ratios vary only between 107 and 120, suggesting that agricultural work is more equally balanced between men and women than is work in other types of activities. By contrast, in construction, the ratio rises from 279.7 in the city and 342.9 in town, to a highly distorted 1,152.3 in rural areas. Quite sharp differentials also characterize administration and management, as well as a number of the other categories.

In virtually all the comparisons among the three residence groups, the sex ratios in towns more closely resemble those of the city population than they do the rural, again reinforcing the conclusion that the towns are more urban in character than they are rural. Moreover, in all

TABLE 12. Sex ratios for industrial and occupational categories, by urban/rural status, 1982

	Cities	Towns	Rural
Industry[a]			
Agriculture	107.5	120.1	116.7
Industry	125.7	139.4	181.6
Construction	279.7	342.9	1,152.3
Transport and communication	279.2	335.7	583.6
Commerce	89.2	108.6	232.0
Management	98.4	100.8	335.1
Science, education, and health	103.6	112.6	239.6
Finance and insurance	125.6	173.1	374.5
Administration	247.6	434.6	736.1
Other	172.1	122.2	213.8
Total	130.3	151.2	126.9
Occupation			
Agricultural laborer	102.9	115.6	114.3
Production and transport worker	154.5	171.2	229.2
Professional	101.6	117.2	264.7
Leader	556.4	935.6	1,905.0
Clerical worker	213.4	370.2	4,881.4
Trade	77.7	83.3	214.3
Service	75.9	95.8	210.9
Other	124.6	138.1	200.0
Total	130.3	151.2	126.9

SOURCE: State Statistical Bureau (1983b:Tables 34 and 35).

[a] For explanation of industrial categories, see Table 10.

industrial categories except agriculture and the residual "other," the lowest sex ratios characterize cities, followed by towns, with rural areas having the highest ratios—usually far in excess of those of cities and towns. The hypothesized relation between type of residence and sex ratio is therefore generally supported by these data; participation of women in the labor force increases as the urban character of place increases.

Examination of the sex ratios of the different occupational groups points to a similar conclusion. For most occupational groups, the sex ratios of rural areas are at least twice as high as those of the city. For some the differential is extremely sharp, especially in leadership and clerical positions. For example, the sex ratio among clerical workers rises from 213 males per 100 females in cities and 370 in towns to 4,881 in rural areas; that of leaders goes from 556 and 935 to 1,905, respectively. By contrast, industrial laborers have a sex ratio of 154 in cities, compared to 229 in rural areas.

While the high sex ratio in the industrial category, construction, is understandable given the considerable physical strength that is needed for work in this sector, the extreme differences that characterize administrative positions are more difficult to explain except in terms of cultural traditions and the low proportions of females with higher education. These historical patterns of sex discrimination in education and political affairs probably result in the present sex distribution in the relevant occupations. Government efforts to emphasize the promotion of women in public affairs and other administrative activities and the growing equality in education should lead to a narrowing of these differentials in future years. Yet, as for the distribution by industry, that by occupation suggests that one important by-product of urbanization is a more balanced sex ratio of the labor force.

A comparison of the percentage distribution of men and women in agricultural and nonagricultural activities (Tables 13 and 14) confirms some general observations made by the United Nations (1980) analysis of the sex differentials in employment patterns. The report argued that women tend to be heavily involved in agriculture where agricultural technology involves considerable manual labor. Such differences by sex are noted in China, where much of agriculture still relies largely on manual labor. In rural areas, 92 percent of all working women are in agriculture compared with 85 percent of men; in the combined city/town urban places, 26 percent of women worked in agriculture, compared with only 21 percent of men (Table 13).

The U.N. also concluded that "at low levels of development, the female share in industry is higher in the rural areas than in the urban areas, while the reverse is true at higher levels" (1980:87). The Chinese statistics tend to support the first part of this conclusion; the second cannot be tested. In rural China, among nonagricultural workers, 61 percent of the women and only 45 percent of the men were engaged in manufacturing. In urban areas, too, the proportion of women in manufacturing exceeded that of men, but the differential was narrower, 57 compared to 51 percent. Although the percentage of nonagricultural workers in industry among both men and women in

TABLE 13. Distribution of the employed population, by industry, urban/rural status, and sex, 1982

Industrial categories	Males				Females			
	Cities	Towns	Rural	Total PRC	Cities	Towns	Rural	Total PRC
Distribution by industry								
Agriculture	22.4	19.0	84.5	70.4	27.2	23.9	92.0	78.0
Industry	41.8	36.1	7.0	14.4	43.3	39.1	4.9	12.8
Construction	9.0	6.8	1.7	3.2	4.2	3.0	0.2	1.0
Transport and communication	7.5	8.7	0.8	2.4	3.5	3.9	0.2	0.9
Commerce	6.0	10.5	1.7	3.0	8.7	14.6	0.9	2.9
Management	1.6	1.3	0.2	0.5	2.1	2.0	0.1	0.5
Science, education, and health care	6.3	6.8	2.9	3.7	7.9	9.2	1.5	3.0
Finance and insurance	0.3	0.9	0.2	0.2	0.4	0.8	0.1	0.1
Administration	4.9	9.8	1.0	2.1	2.6	3.4	0.2	0.7
Other	0.2	0.1	0.03	0.1	0.1	0.1	0.01	0.03
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Distribution by urban/rural status								
Agriculture	5.0	1.8	93.2	100.0	5.4	1.7	92.9	100.0
Industry	45.7	16.7	37.6	100.0	52.7	17.3	30.0	100.0
Construction	44.1	14.1	41.8	100.0	67.1	17.5	15.4	100.0
Transport and communication	49.5	24.4	26.1	100.0	60.2	24.7	15.1	100.0
Commerce	31.7	23.4	44.9	100.0	46.4	28.2	25.4	100.0
Management	53.0	18.8	28.2	100.0	66.6	23.0	10.4	100.0
Science, education, and health care	26.7	12.2	61.1	100.0	41.5	17.5	41.0	100.0
Finance and insurance	23.3	26.0	50.7	100.0	39.4	31.8	28.8	100.0
Administration	35.9	30.0	34.1	100.0	55.7	26.5	17.8	100.0
Other	46.9	13.9	39.2	100.0	47.8	20.0	32.2	100.0
Total	15.8	6.6	77.6	100.0	15.6	5.7	78.7	100.0

SOURCE: State Statistical Bureau (1983b).

a. For explanation of industrial categories, see Table 10.

TABLE 14. Distribution of the employed population, by occupation, urban/rural status, and sex, 1982

Occupational categories	Males				Females			
	Cities	Towns	Rural areas	Total PRC	Cities	Towns	Rural areas	Total PRC
Distribution by occupation								
Agricultural laborer	21.0	17.8	81.9	68.1	26.6	23.3	91.0	77.1
Production and transport worker	49.0	43.8	9.9	18.3	41.1	38.7	5.5	13.0
Professional	10.1	11.7	4.1	5.6	13.0	15.1	2.0	4.4
Leader	6.3	8.6	1.2	2.5	1.5	1.4	0.1	0.4
Clerical worker	4.9	6.9	0.7	1.7	3.0	2.8	0.1	0.7
Trade	3.2	5.2	1.1	1.7	5.5	9.4	0.7	1.9
Service	5.2	5.7	1.1	2.0	9.0	9.0	0.6	2.4
Other	0.3	0.3	0.03	0.1	0.3	0.3	0.02	0.1
Total number	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Distribution by urban/rural status								
Agricultural laborer	4.9	1.7	93.4	100.0	5.4	1.7	92.9	100.0
Production and transport worker	42.2	15.9	41.9	100.0	49.6	17.0	33.4	100.0
Professional	28.6	14.0	57.4	100.0	45.5	19.3	35.2	100.0
Leader	40.2	23.2	36.6	100.0	62.1	21.4	16.5	100.0
Clerical worker	44.1	26.2	29.7	100.0	63.8	21.9	14.3	100.0
Trade	29.6	19.8	50.6	100.0	44.5	27.9	27.6	100.0
Service	40.5	18.7	40.8	100.0	57.8	21.2	21.0	100.0
Other	54.3	20.7	25.0	100.0	61.3	21.1	17.6	100.0
Total number	15.8	6.6	77.6	100.0	15.6	5.7	78.7	100.0

towns was somewhat lower than in cities, in both urban categories relatively more women than men were in industry, again supporting the pattern noted by the United Nations.

In addition to industrial workers, only two other nonagricultural categories–science/education/health care and trade–involve any noteworthy percentage of rural women; together they account for almost one-third of the nonagricultural labor force. All other nonagricultural categories combined encompass less than 10 percent of women employed in nonagricultural work. Rural men closely resemble rural women in the percentages of the nonagricultural workers found in the broad category encompassed by science/education/health care and in commerce, but a notable percentage (one-fifth) are also found in construction, administration, and transport/communication.

Among urban women, after industry, science/education/health care and commerce account for most of the nonagricultural employment, but construction and transport/communication account for 5 percent or more of nonagricultural employment. The dispersion among nonagricultural workers is therefore noticeably greater in urban places than in rural areas. For men, the nonagricultural distribution is more equitable among the construction, transport/communication, commerce, science/education/health care, and administrative categories, with between 8 and 11 percent in each. All of these were substantially below employment in industry, which accounted for just more than half of the nonagricultural labor force. As was true of the female labor force, the differences between cities and towns tended to be small, except for a few categories. The percentage in commerce was greater in towns than cities, as was the higher concentration in administration. On the other hand, fewer men in towns than in cities were engaged in construction, undoubtedly reflecting the proportionally greater amount of construction characterizing China's cities.

The distributions of men and women by occupation for the three residence categories (Table 14) indicates that in rural areas, both male and female nonagricultural workers are heavily concentrated among production and transport workers and, to a lesser extent, as professionals. In urban places, production constitutes by far the major occupational category for men and women. Among the remaining nonagricultural occupations, professionals are next in importance, somewhat more for women than men. Service workers and trade workers follow in importance for women; for men, "leaders" is the third most prominent nonagricultural category, followed by clerical workers and service workers.

Again, as for the industrial distributions, the differences between city and town are generally not great. The most striking difference for women is the considerably higher percentage of town residents, compared with city dwellers, in trade. For men, the greatest relative differences characterize the leader and clerical worker occupations, with proportionally more of each in towns than in cities. Lower percentages of women and men are employed as agricultural workers and production workers in towns than in cities.

As previous analysis has suggested, these data, too, indicate that towns function, although on a much lower level than cities, as points of concentration for the broad range of economic, administrative, and social activities that are associated with urban places. Concurrently, the data also point to a noteworthy degree of such activity in rural areas. Earlier discussion has indicated that a growing number of rural residents supplement their agricultural work with activities involving both nonagricultural work in rural places and travel to towns and cities to engage in trade and service work. The evidence of nonagricultural activity documented by the census data therefore reflects only part of the picture. But it will take other types of data to assess the situation completely.

Literacy status by residence category

Educational differences may still be an important factor in accounting for both sex differences in occupational composition and differences between the occupational composition of urban and rural places; this is suggested by the limited information available from the 10 percent sample of the 1982 Census describing the literacy status of the population by age, sex, and urban/rural residence. Unfortunately, these statistics aggregate towns with the rural counties, so only the cities can be identified as a distinct urban residence category. Sharp differences exist between cities and towns/counties and between men and women (Table 15). For males 12 and older, only 9 percent living in cities were classified as illiterate or semiliterate, but 21 percent of those living in towns and counties were so classified. For women, the level of illiteracy was much higher in both locations, 24.6 and 49.1 percent, respectively, but the magnitude of the differential in illiteracy, TABLE 15. % illiterate and semiliterate, by age, sex, and urban/rural status,[a] 1982

	Males			Females		
Age group	Cities	Towns and rural areas	Total	Cities	Towns and rural areas	Total
12–14	1.8	5.8	5.3	3.4	16.1	14.6
15–19	1.4	4.7	4.2	3.2	16.6	14.7
20–24	1.6	6.7	5.7	4.9	27.5	23.3
25–29	2.7	11.0	9.6	9.7	41.7	36.2
30–34	4.2	15.0	13.2	12.7	45.6	40.4
35–39	5.0	15.9	14.2	15.3	48.7	43.4
40–44	8.4	25.3	22.4	24.3	64.7	57.5
45–49	13.1	36.5	32.3	42.6	81.4	74.5
50–54	18.5	45.2	40.6	59.2	90.2	85.2
55–59	24.4	51.6	47.4	69.0	93.3	89.8
60 & older	40.0	64.4	60.9	85.1	97.1	95.5
Total	8.9	21.1	19.1	24.6	49.1	45.3

SOURCE: State Statistical Bureau (1983b).

a. Towns and counties combined.

about 1:2 between cities and towns/counties, was not very different from that characterizing males.

A key factor in these differentials is age. Among males in cities, illiteracy falls below 10 percent for all those younger than 45. For men in rural areas, however, all age groups have higher illiteracy levels than city males, and the level is below 10 percent only for those younger than 25. By contrast, illiteracy in cities reaches as high as 40 percent only for males 60 and older, but it reaches this level at age 50 in towns/counties and then rises above 60 percent for those 60 and older.

In cities, all age groups of females have higher illiteracy rates than the corresponding age groups of males, and the differentials are quite substantial. In the cities, only females younger than age 30 have illiteracy rates below 10 percent, and the level exceeds 40 percent for those 45 and older. In towns and rural areas, not even the youngest age group has illiteracy levels of less than 10 percent, and the level rises from more than one-fourth of those 20–24 to about half of those in the 35–39 age group and to 90 percent or more of those age 50 and older. Thus, even while urban residence contributes substantially to reductions in illiteracy, only among the younger groups are the problems minimal. These sharp city versus town/county differentials in literacy stress the role of the city as a center of modernization for both men and women. Concurrently, the sex differences within both the city and the other residence group point to the differential access which women have had to education in both urban and rural places. These differences in turn help to explain some of the earlier noted residential differentials in occupation. The significant decline in illiteracy among the younger age segments, especially in cities, suggests also the key role that urbanization and the spread of urban values to rural areas can play in raising the quality of life.

DISCUSSION

The concerted efforts of the Chinese government to control population growth through its one-child family policy has understandably received worldwide attention. Less well known outside China is the considerable attention given by Chinese government officials at all levels to problems related to the rural-urban population distribution, to the urban growth rates, and to the relations between employment opportunities and rural and urban development. These concerns have led to the emergence of a clearly and firmly articulated policy regarding population movement and the distribution of population between rural and urban places and among urban places of different size.

China's officials consider efforts in these areas, like those in fertility control, to be of critical significance for the future development and modernization of the nation. From an international perspective, the efforts to control population distribution and to achieve orderly urban growth merit close monitoring and evaluation for the lessons they may provide for other developing countries. To the extent that many developing countries have rated problems of population distribution even higher than those of population growth, China's experiences should be of particular interest. They may provide insights on ways to avoid some of the negative consequences of too rapid urban growth at the same time that the benefits of urbanization for the overall development process and the absorption of surplus rural labor can be realized.

The availability of data from the 1982 Chinese Census has provided a unique opportunity to assess in some depth the patterns of urbanization in China and the changes that have occurred since the Census of 1953. This analysis has documented that in the three and a half decades since establishment of the People's Republic, the urbanization level has risen slowly, from 10.6 percent of the population being urban in 1949 to 20.6 percent in 1982. Moreover, despite some changes in the urban hierarchy and some evidence of success in control of big city growth, almost two-thirds of the total urban population remains concentrated in big cities (500,000 and more) and almost 40 percent live in metropolises of more than 1 million. In fact, with 38 such metropolises, China has more million-plus cities than any other country of the world, just as its 1982 urban population of 206 million exceeds that of all other countries of the world; indeed, despite its low percentage of China's total population, China's urban residents are more numerous than the total populations living in any country of the world except India, the Soviet Union, and the United States. The Chinese situation is particularly challenging because, concurrently, about 800 million people still live in rural areas and are largely engaged in agricultural activities. This means that the concerted efforts now in process to modernize and develop the country must, sooner or later, involve the absorption of several hundred million more rural people into nonagricultural activities and possibly into urban places. China's urban population also remains imbalanced in its geographic distribution, although the extent of this imbalance has diminished some through efforts to achieve higher rates of industrialization and urbanization and city development in the inland provinces.

For many of the 35 years since the establishment of the People's Republic, smaller cities and towns did not fare well; inadequate production of rural commercial products meant that the functions of small urban places as bridges between larger urban centers and rural areas were generally curtailed. Residents of many smaller places moved to big or medium-sized cities; other town residents joined communes. Since 1980, however, Chinese policy makers see these smaller places as playing a key role in the future urbanization of China as well as in overall rural development (Fei, 1984). These areas are increasingly being looked to both as potentially absorbing the vast surplus rural labor that is developing and as incipient urban centers that will provide alternative locations for industry and commerce. As such, these smaller places are thereby expected to relieve the pressure on larger cities by providing urban amenities to rural residents who might otherwise seek these attractions by migrating to cities and by also providing job opportunities to increasing numbers of rural residents who will continue to live in rural areas, sometimes functioning partly as peasants while commuting to small towns and cities to work in private, collective, or state-owned industry and commerce.

The limited evidence already available from the 1982 Census on the characteristics of the population living in the 2,664 towns of China suggests that these places have already assumed an urban character and that they are likely to play a key role in China's future urbanization. The basic urbanization policy, adopted in 1980, calls for strict control of the expansion of big cities, rational development of the medium-sized ones, and vigorous efforts to build up small cities and towns. Such a policy is premised on the belief that the close linkage of industry and agriculture in smaller cities and towns will allow fuller use of local natural resources, raw materials, and manpower. Thus, they are expected to absorb the surplus rural labor force resulting from the combined effects of population growth and the introduction of the responsibility system in agriculture.

Local industry and workshops operated by communes and brigades and small private enterprises are seen as providing the operative mechanism in small town development. In some areas, the government gives direct help to peasants to enable them to make the transition from agricultural to nonagricultural activities. Such help includes financial assistance, provision of raw materials, and technical training. Peasants may obtain permits to become specialists in such service activities as tailors, carpenters, and blacksmiths, and then to hire apprentices. Others may be given permission to open shops or operate small factories, or to purchase tractors, carts, or boats for transportation. Technically qualified peasants may be allowed to operate nurseries, bookshops, or clinics and are offered technical guidance to enhance the quality of their activities. These private economic activities are a drastic break with earlier restrictions. Accordingly, reports indicate, the government seeks to provide legal protection and adequate publicity to the new policy as a way of ensuring that peasants are not deterred from engaging in such activities out of fear of being stigmatized by fellow peasants as being "out-of-line."

The policy stress placed on the potential value of stronger linkages between rural and small urban places and the broader networks into which such places fit is evidenced in the Circular of the Communist

Party of China Central Committee, issued early in 1984 as Document No. 1 (*People's Daily,* January 20, 1984) on the topic of rural work. It called for various measures to improve the infrastructure for commodity circulation, including better provision of storage facilities, warehouses, transportation, and communication; it also recognized that big and medium-sized cities play a key role in rural development by providing free markets for peasants, by offering sites for wholesale markets for farm produce and sideline products, and by becoming sites where trade centers might be created.

Concurrently, this key document recognizes that with the development of greater labor divisions in rural areas, many more people will withdraw from farming to engage in sideline activities, such as forestry, fishing, and animal husbandry, and will also transfer into industry and commerce in small towns. As the document phrased it, "If we could not change the situation of 800 million people engaged in farming, peasants would not be well off, the country could not prosper and be strong, and the four modernizations would not be realized."

The document also recognizes existing commune- and brigade-run enterprises as pillars of the rural economy, often closely linked to large factories in cities. In particular, the document envisages rural industry as centralized in towns to take advantage of economies with respect to energy use, storage costs, transportation, water needs, sewage disposal, and other infrastructure. Such concentration is assumed to also serve as an impetus for providing the rural population with improved cultural, educational, and service undertakings by making towns the economic and cultural centers of rural areas.

Perhaps the strongest evidence both of the emphasis placed on development of small towns as alternatives to further growth in large cities and of their role in rural development, is the provision in the document that peasants will be allowed on an experimental basis to settle in towns to engage in industry, business, and service trade, providing they make their own grain arrangements (presumably mainly with the communes where they have been members) and do not become dependent on state supplies. The policy implies that peasants would be allowed to build homes in the towns, although they would not have permanent registration there; urban residence might be terminated if conditions should change such that continued peasant residence burdened the town's ability to provide jobs, housing and grain supplies. Anticipating such developments, the document urges towns to plan for both short- and long-term construction and in doing so, to use land sparingly. Clearly, the recent developments in rural areas and the very substantial peasant exodus out of agriculture into industrial, commercial, and service work has given impetus to this emphasis on the town as a place of residence and as a link in the rural-urban network.

These links have been strengthened even further by a document released by the State Council in October 1984 (*People's Daily,* October 22, 1984) that stipulates that peasants engaged in nonagricultural work may obtain town registration in towns at the commune level. In doing so, the peasants must return their assigned land to the production brigade, but they reserve the right to return to their place of origin. The same document urges authorities in commune towns to make building materials and rentals conveniently available.

Policy makers anticipate that linkages to larger urban places will be reinforced by these developments. One such link is created through the tie-in of small rural factories with large urban plants. The small workshops produce component parts for the larger factories, thereby obviating the need for more urban construction and for the movement of workers into cities. Commodity production for the urban market also helps relieve the pressures resulting from the inability of urban industry to meet market demand. Such interaction between urban and rural industries—and the involvement of urban experts as advisers to the newly developing rural industrial and commercial activities—provides further opportunities for urban ideas and knowledge to spread to rural areas. Rural industry is seen as contributing to the creation of urban facilities in rural locations and to the transformation of some commune seats into small towns. Small-town employment in small factories and commercial establishments, coupled with the use of commune income to improve schools, medical, recreation, and business facilities, and roads and other infrastructure, is envisaged as leading both to a higher quality of rural life and to a reduction in the desire to move to cities. These developments are not without their problems: considerable concern has already arisen about (1) the extent to which materials produced in rural workshops match the quality of those produced in the larger urban factories; (2) the availability of adequate energy in rural areas; and (3) pollution of the rural environment.

Evidencing the rapid pace of policy implementation since 1980 and elaborated upon in Document No. 1 at the beginning of 1984 is the report in the *People's Daily* (September 9, 1984) that by the end of June 1984 the total number of towns in China had risen to 5,698, setting, as they put it, "a record figure since liberation." The report goes on to indicate that since release of Document No. 1, 2,900 new towns were established in different places in the country and a total of 10,000 towns is expected by the end of the year. While the report does not indicate the exact process by which this dramatic increase was achieved, the very fact that it is reported testifies to the weight given to small-town development as the direction of future urbanization.

News reports in China indicate that the growing prosperity characterizing many rural areas is revitalizing old Chinese towns. Enterprises in such towns are allowing substantial numbers of the rural labor force to shift from agricultural to nonagricultural employment. Many of them work in the factories and workshops established in small towns while they continue to live in their villages. Some are able to take a factory or service job in the town while concurrently they continue to engage in agriculture under the contract system that is part of the responsibility system. Some work only at their town jobs or in nonagricultural activities in the village, while other members of their household engage in farming or sideline activities. A growing number of rural households throughout China consist of such mixes, giving rise to the label "half worker/half peasant households" (*China Daily,* August 18, 1984). By the end of 1983, industrial township enterprises are reported to have absorbed 32 million farm workers (*China Daily,* August 10, 1984).

As a result of the diversification of economic activities stimulated by small town development and the responsibility system, considerable temporary movement from rural to urban places has evolved. Such circulation has provided still another mechanism for absorbing surplus labor, for transferring capital from urban to rural places, and for satisfying the desires of many peasants to participate in urban life. From the point of view of the rural area, such migration allows the surplus labor to engage in productive activity, and avoid becoming a liability to the brigade or the commune; by going to the city or to another rural area to earn income, the individual is able to contribute to the support of agricultural development through remittances used by the brigade for purchase of machinery, fertilizer, and other items. At the same time, since such individuals usually go to the city only if they know they can find employment, they are not seen as putting pressure on urban facilities, but rather as providing a desirable function. Nor do they place a burden on the state, since responsibility for their basic food needs and social welfare continues to rest with the commune. All these temporary urban dwellers, as well as the rural labor force engaged in nonagricultural work, are thus considered to be contributing to the modernization of the countryside, and they are also seen as forging links between the countryside and the city and integrating farming, industry, and service activities.

Together, such temporary movement and the job opportunities expected to be provided by rural-based industry and sideline activities in small towns are seen by Chinese policy makers as preventing the surplus rural labor from flooding into the large cities on a permanent basis. Such development is thus regarded as a way of avoiding the experiences of other developing countries, which have been characterized as having led to the mass movement of population into big cities and to the transfer of rural poverty to urban places. In contrast, the Chinese argue that their new agricultural policy and the responsibility system provide the best approach to raising the income level of the rural population, to creating more job opportunities for the anticipated massive increase in surplus rural labor, and to fostering the eventual concentration of commodity production and specialized activities in selected rural areas which have the potential of becoming small urban centers.

While the immediate available evidence points to success in meeting these goals, it is premature to judge whether these changes can operate efficiently on a large enough scale to absorb the millions of surplus agricultural laborers who will need to be absorbed. Moreover, it is not at all clear whether the urban amenities provided in this way will be sufficient to meet the preferences many persons will develop for participation in the consumer society represented by life in the medium-sized or big city. Rising standards of living may well lead to continuously rising levels of aspirations that can be met fully only by permanent residence in a big city. The extent to which changes now in process can substitute for such urban residence need careful monitoring and evaluation; the experiences with current policies and efforts to implement them have obvious implications not only for China's urban structure but also for urbanization in developing countries.

Strongly favoring the growth of small cities and towns as alternates to bigger city growth while also determined to control the growth of big cities, Chinese planners do seem increasingly to recognize the important role that larger cities can play in China's overall development and in the development of both smaller urban places and the rural hinterlands of the big cities. Since the early 1980s, big cities such as Chongqin, Wuhan, and Shanghai have been encouraged to help smaller places by providing technical expertise and financial support and creating local industrial establishments, which may be branch operations of larger firms centered in the cities. Unified planning, designed to exploit and integrate the advantages offered by each of the localities within the region, is intended to rely on the key city as the center and to break the barriers between regions, provinces, departments—both urban and rural—by creating inter-trade and transregional economic zones and networks (*Beijing Review,* 1984). In this way, it is hoped that the large cities will "carry" along the smaller, less developed places in the modernization process. Creation of these networks is not envisaged to increase migration to the big city; rather, the hope is that the greater integration achieved will stimulate the growth rates of smaller urban places and encourage movement to them.

Still one other development testifies to the continuing importance attached to large urban places in China. Reflecting the needs associated with its modernization efforts and the need for technology and foreign exchange, 14 coastal cities in China have been designated economic development zones to join the four special economic zones (SEZs) as centers of foreign business investment. Like the SEZs, the port cities are to be allowed to practice flexible economic policies, including greater control over foreign economic relations and trade and greater power to offer preferential treatment to overseas investors. All of the cities are located in economically developed areas and have relatively solid foundations of industry, science, and technology. Plans call for establishment within the cities of a number of economic and technical development districts where manufacturing, commercial, and scientific facilities will be located, away from existing areas of high urban density. It is not anticipated, however, that this will lead to rural-urban migration; rather, these centers are expected to rely on their own labor supply or on migrants from other urban places in the same general area.

Both the recent policies giving big cities leadership roles in the development of smaller urban places and rural hinterlands and the policies designating the 14 coastal cities as special centers of economic development clearly indicate that big cities will continue to play a key role in China's modernization process. Inevitably, these policies bring into question whether China can concurrently succeed in its goal of strictly controlling the demographic growth of big cities. Are these policies in contradiction to each other? Success in the efforts to achieve greater development and leadership at the center, especially when this will involve expansion of manufacturing, commercial, and technological activities, would be expected to lead to a demand for more manpower than is available from the resident population. Especially if current migration restrictions are relaxed in the interest of more efficiently matching skills with needs, migration to these cities may take on increased importance. Since both policies involving new roles for selected cities have been introduced since the early 1980s, it is still premature to assess either the success of these efforts or their demographic impact.

It is fortunate that the introduction in 1979 of the responsibility system and the urbanization policies adopted in the 1980s preceded or followed by only a short time the 1982 Census. As a result, the data from the census can provide baseline information on the structure of the urban hierarchy. Such data allow comparisons of the urban and rural populations at a time when efforts were initiated to foster small city and town growth and to absorb surplus rural labor into nonagricultural activities. Using the 1982 data, later surveys and censuses will be able more easily to assess the changes resulting from these policies and to evaluate their success in achieving greater equity both in the spatial population distribution and its access to a better quality of life.

REFERENCES

Aird, John S.

1982 Population studies and population policy in China. *Population and Development Review* 8 (June):267–97.

Banister, Judith

1984 An analysis of recent data on the population of China. *Population and Development Review* 10 (June):241–71.

Beijing Review

1983 Why the jump in the urban population between 1981 and 1982? Volume 26 (February 14):28.

1984 Economic reform: facts behind the Shanghai Economic Zone. Volume 27 (April 16):16–23.

Chandler, Tertius, and Gerald Fox

1974 *3000 Years of Urban Growth.* New York: Academic Press.

Chang, Sen-Dou

1976 The changing system of Chinese cities. *Annals of the Association of American Geographers* 66 (September):398–415.

China Daily

1984 Peasants flock to join town enterprises. August 10.

Rural prosperity rejuvenates towns. August 18.

More rural markets are urged for industries. September 12.

Chiu, T.N.

1980 Urbanization processes and national development. In C.K. Leung and Norton Ginsburg (eds.), *China: Urbanization and National Development,* pp. 89–107. Chicago, Illinois: Department of Geography, University of Chicago.

Coale, Ansley J.

1984 *Rapid Population Change in China, 1952–1982,* Report No. 27. Washington, D.C.: National Academy Press.

Ding Yisheng

1984 Urban rural distribution of China's population. *Renkou Yanjiu (Population Research)* 4 (July):14–17.

Fei Xiaotong

1984 Planning of population growth and distribution. *China Reconstructs* 33 (May):24–27.

Ginsburg, Norton

1952 China's changing political geography. *Geographical Review* 42 (January): 102–17.

Koshizawa, Akira

1978 China's urban planning: toward development without urbanization. *Developing Economics* 16 (March):3–33.

Leung, C.K., and Norton Ginsburg, eds.

1980 *China: Urbanization and National Development.* Research Paper No. 196. Chicago, Illinois: Department of Geography, University of Chicago.

Li Mengbai

1983 Planned city growth. *China Reconstructs* 32 (November):7–9.

Ma An

1984 An evaluation on the quality of the data of the 1982 Population Census of China. Paper presented at International Seminar on China's 1982 Population Census, Beijing, March.

Mao Tsetung

1977 *On the Ten Major Relationships.* Beijing: Foreign Language Press.

Ni, Ernest

1960 *Distribution of the Urban and Rural Population of Mainland China: 1953 and 1958.* Series P-95, no. 56. Washington, D.C.: U.S. Bureau of the Census.

Orleans, Leo A.

1982 China's urban population: concepts, conglomerations, and concerns. In *China Under the Four Modernizations,* Part 1, pp. 268–302. Selected papers submitted to the Joint Economic Committee, 97th Congress of the United States. Washington, D.C.: Government Printing Office.

Pannell, Clifton W.

1984 China's changing cities: an urban view of the past, present, and future. In Norton Ginsburg and Bernard A. Lalor (eds.), *China: The 80s Era,* pp. 192–221. Boulder, Colorado: Westview Press.

People's Daily (*Renmin Ribao*)

1984 January 20.
September 9.
October 22.

Population Census Leading Group

n.d. *Instructions for Filling out the Questionnaire of the Third National Population Census.* Beijing: State Council.

State Statistical Bureau (SSB)

1982 *Major Figures on the Third Census of Population of China.* Beijing: China Statistical Publishing House.

1983a *Statistical Yearbook of China 1983.* Hong Kong: Economic Information and Agency.

1983b *Ten Percent Sampling Tabulation on the 1982 Population Census of the People's Republic of China.* Beijing: China Statistical Publishing House.

Taylor, Jeffrey R.

1984 Employment and unemployment in China. Paper presented at workshop on China's 1982 Population Census, East-West Center, Honolulu, Hawaii, December.

Ullman, Morris B.

1961 *Cities of Mainland China: 1953 and 1958.* Series P-95, no. 59. Washington, D.C.: U.S. Bureau of the Census.

United Nations

1980 *Patterns of Urban and Rural Population Growth.* Population Studies, no. 68. New York: United Nations.

1982 *Estimates and Projections of Urban, Rural, and City Populations, 1960–2025: The 1980 Assessment,* ST/ESA/SER.R/45. New York: United Nations.

Ye Shuzan

1982 Urbanization and housing in China. *Asian Geographer* 1:1–11.

Yeh, Anthony Gar-On, and Xueqiang Xu

1984 Provincial variation of urbanization and urban primacy in China. *The Annals of Regional Sciences* 23 (November):1–20.

Zhu Chuo

1981 Rationalization of population distribution. In Liu Zheng et al. (eds), *China's Population: Problems and Prospects,* pp. 94–110. Beijing: New World Press.

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Comparison of fertility trends estimated alternatively from birth histories and own children

Robert D. Retherford
and Iqbal Alam

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PREFACE

A preliminary version of this paper was presented at the World Fertility Survey Symposium, 24–27 April 1984, in London.

We are grateful to John Cleland, Thomas Pullum, and Chris Scott for helpful comments, and to Robin Loomis, Wayne Shima, Victoria Ho, and Judith Tom for research and computer programming assistance. Support for this research was provided by the United States Agency for International Development and the International Statistical Institute.

The views expressed herein are those of the authors and do not necessarily reflect the views of the United Nations.

ABSTRACT Fertility trends estimated alternatively from birth histories and own children are compared for eight developing countries in which the World Fertility Survey was conducted. Principal hypotheses are that fertility trends estimated by the two approaches suffer from similar errors in the reporting of women's and children's ages, and that these errors are more severe in estimates derived from own children than in estimates derived from birth histories. The hypotheses are confirmed in four of the eight countries. Potter's hypothesis about misplacement of events toward the survey date, which assumes bunching of births five to ten years before the survey and accurate reporting of births during the first five years or so immediately preceding the survey, resulting in a spurious estimated fertility decline, does not receive much support from these data. Some of the estimated fertility declines do indeed seem spurious, but Potter's explanation of them seems inconsistent with the data. In some countries, patterns of age misreporting involving upward rounding of children's ages provide an equally plausible explanation that is more consistent with the data.

The birth history method and the own-children method are two major methods of estimating fertility trends from survey or census data. The birth history method has been used, for example, in the World Fertility Survey (WFS). The own-children method (Cho, 1973) has been applied mainly to censuses or large household surveys. This paper compares fertility trends estimated alternatively by these two methods.

It is well known that both birth history analysis and own-children analysis frequently provide distorted estimates of fertility trends. The reasons underlying such distortions are, however, imperfectly understood. In a widely cited article on estimating fertility trends from birth histories, Potter (1977) emphasized the role of event misplacement, which can lead to overestimating a decline in age-specific birth rates. He hypothesized that recent events are recorded fairly accurately, but more distant events are misplaced toward the date of interview. The consequence is an artificial bunching of events five to ten years before the survey that results in an estimated fertility decline during the ten years or so previous to the survey that is spuriously large. Event misplacement tends to be associated with misreporting of children's ages. For example, an erroneous response that a child's age is, say, 11 years may be associated in a very direct way with a parallel erroneous response that the child's date of birth was 11 years previous to the survey.

Event misplacement and associated misreporting of children's ages are only part of the story. Analysis of data on own children suggests that misreporting of adults' ages can also lead to major distortions in fertility trends. For example, Retherford and Mirza (1982) have shown that in Pakistan a pattern of age exaggeration that increases with age for both children and adults could explain a pattern of estimated fertility change whereby fertility declined substantially at the older reproductive ages and increased substantially at most younger ages during a period when other evidence suggests that very little fertility change of any kind actually occurred. In contrast to Potter's model, which assumes accurate fertility estimates for the first five years or so immediately preceding the survey, age exaggeration of children implies fertility underestimates during this same period. This point of difference is elaborated later in this paper.

The principal hypothesis examined in this paper is that fertility trends estimated alternatively from birth histories and own children suffer from similar errors in the reporting of women's and children's ages and therefore should show a similar pattern of distortions from this source. It is hypothesized additionally that the distortions are less pronounced in estimates of fertility trends derived from birth histories than in those derived from own children. One expects this because the interviewer has more opportunity to notice and correct internal inconsistencies (e.g., implausibly short birth intervals) when collecting birth histories than when collecting own-children data. Moreover, questions on ages of children are usually more extensive and probing in the birth histories than in the household surveys. Furthermore, reporting by surrogates is absent in birth histories, where mothers invariably report for themselves and their children, but frequent in the household surveys, where the household head often responds for the entire household. A number of different methods of collecting birth histories were employed in WFS surveys (Jemai and Singh, 1984), a fact that affects the interpretation of findings presented later in this paper.

These hypotheses about similar sources of distortions in fertility estimates derived from birth histories and own children are tested on WFS data from eight developing countries: Dominican Republic, Indonesia, Kenya, Korea, Nepal, Pakistan, Sri Lanka, and Syria. Each of these country surveys covered a sample of either ever-married women or, in the cases of Dominican Republic and Kenya, both ever-married and single women, from whom birth histories were collected.

This sample, called the individual sample, was embedded in a larger sample of complete households, called the household sample. In this study, the fertility trend is estimated alternatively from birth histories from the individual sample and from own-children data from the household sample. The two estimated trends are then compared for each of the eight countries.

METHODOLOGY

In the birth history approach, age-specific totals of births to ever-married women are reconstructed from the birth histories for each year previous to the survey. Person-years of exposure to risk for ever-married women are similarly reconstructed. Except for Dominican Republic and Kenya, where the individual sample included both ever-married and single women, person-years at risk for all women, regardless of marital status, are estimated by dividing appropriate age-specific categories of person-years at risk for ever-married women by appropriate age-specific proportions ever-married at the time of the survey. These proportions ever-married are usually determined from the WFS household samples; thus the birth history analysis is usually not based entirely on the individual sample. In these computations, base calculations are done in century months, which are then aggregated to years or group of years as desired. The birth history approach ordinarily assumes that all births previous to the survey occurred to women who were ever-married at the time of the survey and that none occurred to women still single (never-married). It also assumes that women who died during the estimation period previous to the survey had, while they were alive, age-specific birth rates identical to those of women who survived. More detailed discussions of birth history analysis are found in numerous WFS publications (see, for example, Goldman, Coale, and Weinstein, 1979).

In this study, the WFS computer program package, FERTRATE, was used to generate fertility estimates from birth histories. The time periods for which estimates were calculated were counted backward in 12-month intervals starting from the time of the survey rather than from January 1 of the year of the survey, so that the estimates are comparable to those generated by the own-children method. The 12-month intervals are labeled by the calendar year that encompasses most of the interval; for example, the period June 1978–May 1979 would be labeled 1978, since more than half of the period falls in 1978.

The second approach to estimation utilizes the own-children method, which is a reverse-survival technique for estimating age-specific birth rates for years previous to a census or, in this instance, a household survey. Enumerated children are first matched to mothers within households, ordinarily on the basis of answers to questions on age, sex, marital status, number of children still living, and relation to head of household. WFS household surveys, however, contain a special code directly linking children to their mothers, so that matching can be accomplished quite simply. These matched (i.e., own) children, classified by own age and mother's age, are reverse-survived to estimate numbers of births by age of mother in previous years. Reverse-survival is also used to estimate numbers of women by age in previous years. After adjustments are made for unmatched (non-own) children, age-specific birth rates are calculated by dividing the number of births by the number of women. Estimates are computed for each previous year or groups of years back to 15 years before the survey. Estimates are not computed further back than 15 years because births must then be based on children aged 15 or older at enumeration, a large proportion of whom do not reside in the same household as their mother and hence cannot be matched. Data for women up to age 65 at enumeration are utilized, in order that birth rates for the full reproductive age range 15–49 can be calculated for every year up to the 15th year before the survey. All calculations are done initially by single years of age and time. Estimates for groups of ages or groups of calendar years are obtained by appropriately aggregating numerators and denominators of single-year rates and then dividing the aggregated numerator by the aggregated denominator.

Unmatched (non-own) children are allocated to mothers by multiplying each age-specific category of matched (own) children, specified by mother's age, by the corresponding age-specific ratio of all children to own children. Thus own children of a given age are adjusted upward by the same factor regardless of mother's age, thereby introducing some error in the fertility estimates since the proportionate distribution of non-own children by age of mother generally differs somewhat from the proportionate distribution of own children by age of mother. Since older women are usually in more stable household situations than younger women, the nature of this error is usually to reallocate a certain proportion of non-own children of a given age from younger mothers to older mothers. This error, if it occurs, usually has little effect on the total fertility rate, but it produces an age pattern of fertility that is too low at the younger ages and too high at the older ages. The adjustment factors for non-own children are usually low enough that this bias is slight. Further details of the own-children method may be found in Cho (1973) and Retherford and Cho (1978).

As mentioned, the own-children method requires life tables, from which reverse-survival ratios are computed. For Dominican Republic, Korea, and Syria, constant mortality over time was assumed, and life tables were calculated by matching child mortality estimates obtained by applying Brass's (1975) method to child survivorship data (numbers of children ever born and still living by age of mother) from the WFS survey itself, to the appropriate Coale-Demeny Model West life table (Coale and Demeny, 1966). For Indonesia, changing mortality was assumed. Estimates of life expectancy for 1960 and 1978 were obtained from the United Nations 1976 and 1981 Demographic Yearbooks and were matched to Coale-Demeny Model West life tables. These life tables were interpolated to single years of age and time by procedures described in Retherford (1978) and Retherford and Cho (1978). A similar procedure was used for Kenya, except that the starting estimates for life expectancy were for 1969 and 1978. For Nepal, we began with life expectancy estimates of 37.5 for 1960 and 42.5 for 1975 and then used the same procedure followed for Indonesia and Kenya. For Pakistan, constant mortality was assumed, and the life table used was that derived from the Population Growth Estimation (PGE) Survey of 1962–65 (Afzal, 1974:22). For Sri Lanka, constant mortality was assumed, and published life tables for 1970–72 were used (Sri Lanka Department of Census and Statistics, 1978).

The own-children estimates are rather insensitive to errors in the mortality estimates, because such errors cause only very small changes in reverse-survival ratios, which under modern mortality conditions are always rather close to one, even in developing countries (Retherford, Chamratrithirong, and Wanglee, 1980). For the countries examined here, errors in the fertility estimates due to mortality estimation errors are much smaller than the errors stemming from age misreporting that are the focus of this report. Moreover, the method of mortality estimation guarantees an absence of mortality fluctuations over time during the estimation period. Thus there is no danger whatever that year-to-year distortions in the estimated fertility trends examined here could be due to mortality estimation errors.

No adjustments for incorrect enumeration (age-selective sampling bias or age misreporting) are made, either in the birth history analysis or in the own-children analysis, since these are the phenomena we wish to observe.

As mentioned, the own-children data include information on women up to 65 years of age. In the birth histories, however, only women below age 50 were queried. This means that, for the 15-year estimation period previous to the survey (the focus of this report), annual estimates of complete age-specific fertility schedules covering the entire reproductive age range 15–49 can be computed from the own-children data but not from the birth history data, which suffer from truncation as soon as one considers time periods previous to the survey. For example, if one wishes to compute age-specific birth rates for the fifth year previous to the survey from the birth histories, one is restricted to women aged 15–44 at that time instead of the full range 15–49. For the full 15-year estimation period, the range is restricted to ages 15–34. This means that the most desirable fertility measure, the total fertility rate, cannot be used in comparing fertility trends estimated by the two methods. Instead, we use the cumulative fertility rate at exact age 35, CFR(35), which is calculated as five times the sum of age-specific birth rates for age groups 15–19 through 30–34. Note the similarity to the total fertility rate, which is calculated in the same way but with a higher age cutoff. It will also be of interest to examine trends in age-specific birth rates.

THE WFS DATA

For this study, the WFS samples examined here may be categorized into three groups:

Group 1

In the first group, which is the largest, the household and individual samples are the same in that every woman in the individual sample belongs to a household in the household sample, and every eligible woman in every household of the household sample belongs to the individual sample (except for those few eligible women who were nonrespondents in the individual survey). Additionally, in this group's surveys, field operations were carried out at approximately the same time and by the same field staff. Nepal, Pakistan, and Sri Lanka are in this group.

Given the almost simultaneous timing of the individual and household interviews for these countries, one might expect a close correspondence between the two samples in reported ages and birth dates. Preliminary tabulations indicated, however, that this was not always the case. Our explanation for this lack of agreement hypothesizes the following sequence of events: Ages of all household members were first collected in the household interview. From the household schedule, ever-married women were identified. These women were subsequently questioned and birth histories collected in individual interviews. In the process of collecting birth histories, there was intensive questioning about birth intervals and dating of events, resulting in some cases, by implication, in improved estimates of the respondent's or her children's ages. But these improved estimates are reflected in the household survey results only to the extent that someone, either in the field or in the office, took the trouble to go back to the household schedules and render the reports of women's and children's ages consistent with birth dates recorded in the birth histories. Apparently this was done much more completely in some countries than in others, and in some cases it may not have been done at all (Jemai and Singh, 1984).

We have no way of knowing the extent of consistency checking and resolving of discrepancies that actually occurred, and this uncertainty results in an unknown degree of contamination that obscures the meaning of the comparisons to be made. The results for Pakistan and Nepal, however, suggest that little consistency checking was done, so that the comparisons seem unambiguous. In Sri Lanka, the third country in this group, age reporting is comparatively good, and there seems to be little consequent distortion in the trend estimates derived by either method.

The numbers of ever-married women in the individual sample and persons in the household sample are 5,940 and 31,971 for Nepal, 4,952 and 32,008 for Pakistan, and 6,810 and 47,914 for Sri Lanka.

Group 2

In this category the individual sample is a subsample of the household sample, with the latter generally covering three or four times as many households as the former. The two surveys were carried out at approximately the same time and by the same field staff so that contamination is not excluded, but it is clearly less serious than in the countries in Group 1 because it can only affect the minority of mothers who were selected for the individual survey. In this study, three countries fall in Group 2: Dominican Republic, Korea, and Syria. In the Dominican Republic, the women in the individual sample were sampled directly from a list of all the eligible women in the household sample (i.e., there was no process of subsampling households). In Korea and Syria, the individual sample consists of all eligible women in a subsample of the households of the household sample.

The numbers of ever-married women in the individual sample and persons in the household sample are 3,115 and 59,493 for Dominican Republic, 5,430 and 104,892 for Korea, and 4,487 and 97,310 for Syria.

Group 3

In this group, the individual and household schedules (the household schedule was very short) were administered in the same interview, so that this case represents the most extreme form of contamination of any of the three groups. Indonesia and Kenya fall in this category. In the case of Indonesia, however, this difficulty can largely be circumvented, because the WFS household survey, known as SUPAS III, was embedded in a much larger survey known as SUPAS II. Thus fertility trends can be estimated by the own-children method from SUPAS II as well as SUPAS III, both of which will be examined in this paper. Because of the large sample size of SUPAS II, the own-children fertility estimates derived from it are relatively free of contamination. No such remedy for contamination is available to us for Kenya, and the results for Kenya are therefore less instructive than those for the other countries.

The numbers of ever-married women in the individual sample and persons in the household sample are 9,155 and 50,994 for Indonesia and 8,100 and 46,101 for Kenya. The SUPAS II sample, of which the WFS household sample, SUPAS III, is a subsample, contains 281,168 persons.

FINDINGS

Findings are presented in the order of the three groups discussed previously. Trends in age-specific birth rates and cumulative fertility rates to age 35, CFR(35), estimated alternatively from birth histories and own children, are given in Appendix Table 1. Figure 1 summarizes this table by graphing trends in CFR(35), and Figure 2 by graphing trends in age-specific birth rates. In each case, trends are estimated alternatively from birth histories and own children.

Results for Nepal are presented in Panel A of Figures 1 and 2. The CFR estimates derived by the own-children method in Panel A of Figure 1 show a pattern that has been found to be fairly typical for countries of continental South Asia, namely large oscillations during the period 10–14 years before the survey and a substantial fertility decline during the 8 years or so immediately preceding the survey. Usually the estimates show a fertility upturn in the year just preceding the survey, and this is also evident for Nepal.

The large oscillations during the period 10–14 years before the survey reflect severe heaping on children's ages 10 and 12, corresponding to births in the 11th and 13th years before the survey. The comparatively low fertility during the first five years or so immediately preceding the survey may be due mainly to age exaggeration from rounding of children's ages to the next higher age. For example, at age 0 (corresponding to the first year before the survey), it is possible that many children of 11 months and perhaps younger ages as well are rounded to 1 year of age, resulting in a deficit of children at age 0 and a corresponding underestimate of cumulative fertility for the first year before the survey. At age 1 (corresponding to the second year before the survey), substantial rounding to two years may occur not only at 23 months of age but also at 22 and 21 months and perhaps even younger ages as well. Thus the tendency to round upward from age 1 to age 2 may be greater than the tendency to round upward from age 0 to age 1, resulting in an overall deficit at age 1. Upward rounding that is substantially more pronounced for 1-year-olds than for 0-year-olds may explain the frequent and often spurious finding that cumulative fertility is lower in the second year before the survey than in the first year. At ages 2, 3, . . . , 8, it is plausible that the rate at which upward rounding increases with age diminishes with age, so that estimated fertility increases as one moves backward in time. At ages beyond 8 (corresponding to nine or more years before the survey), heaping on ages 8, 10, and 12 predominates, resulting in sharp peaks in the CFR trend during the 9th, 11th, and 13th years before the survey.

The parallel CFR trend based on birth histories for Nepal in Panel A of Figure 1 bears only a slight resemblance to that based on own

FIGURE 1. Trends in cumulative fertility rates, CFR(35), estimated alternatively from birth histories and own children

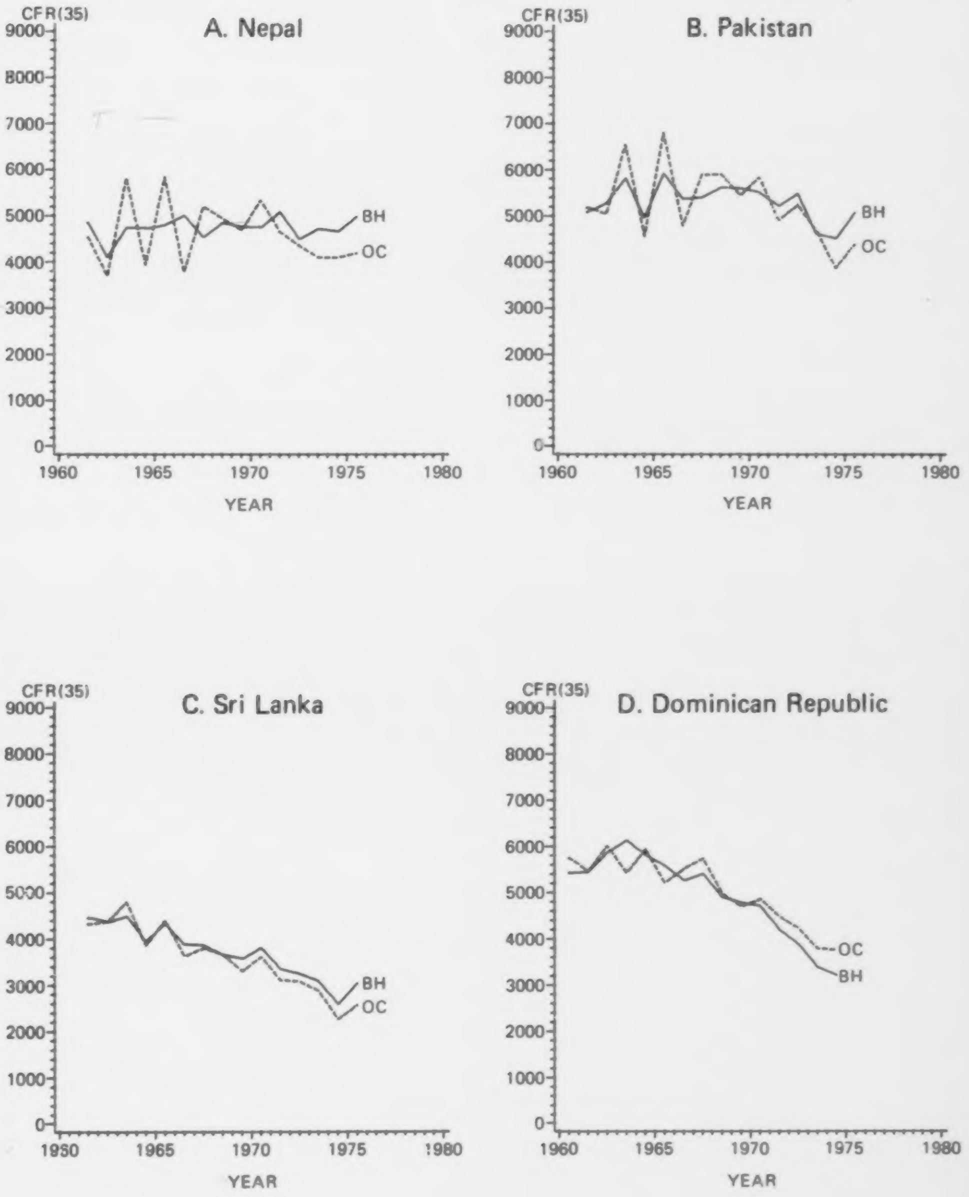


FIGURE 1. *(continued)*

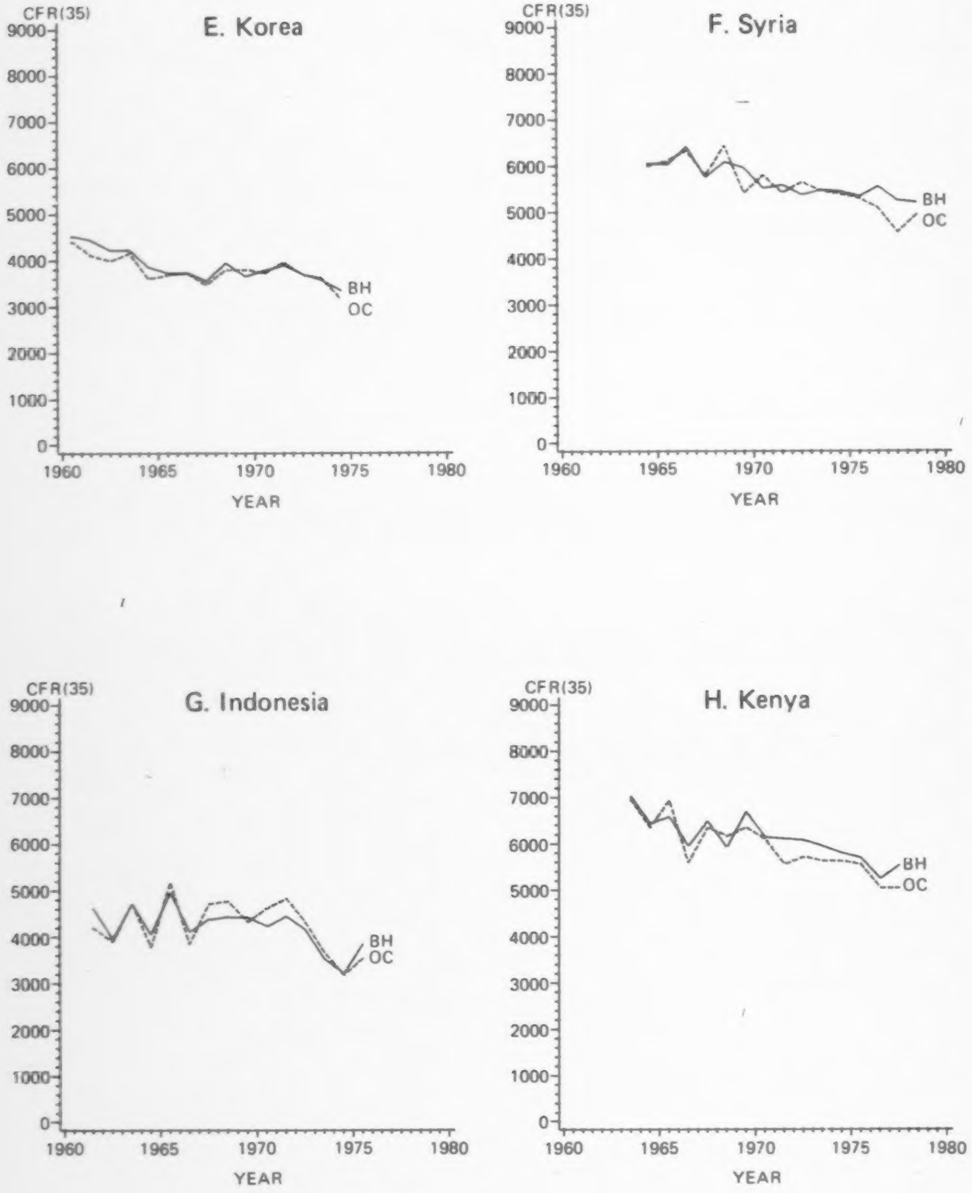


FIGURE 2. Trends in age-specific birth rates estimated alternatively from birth histories and own children

A. Nepal

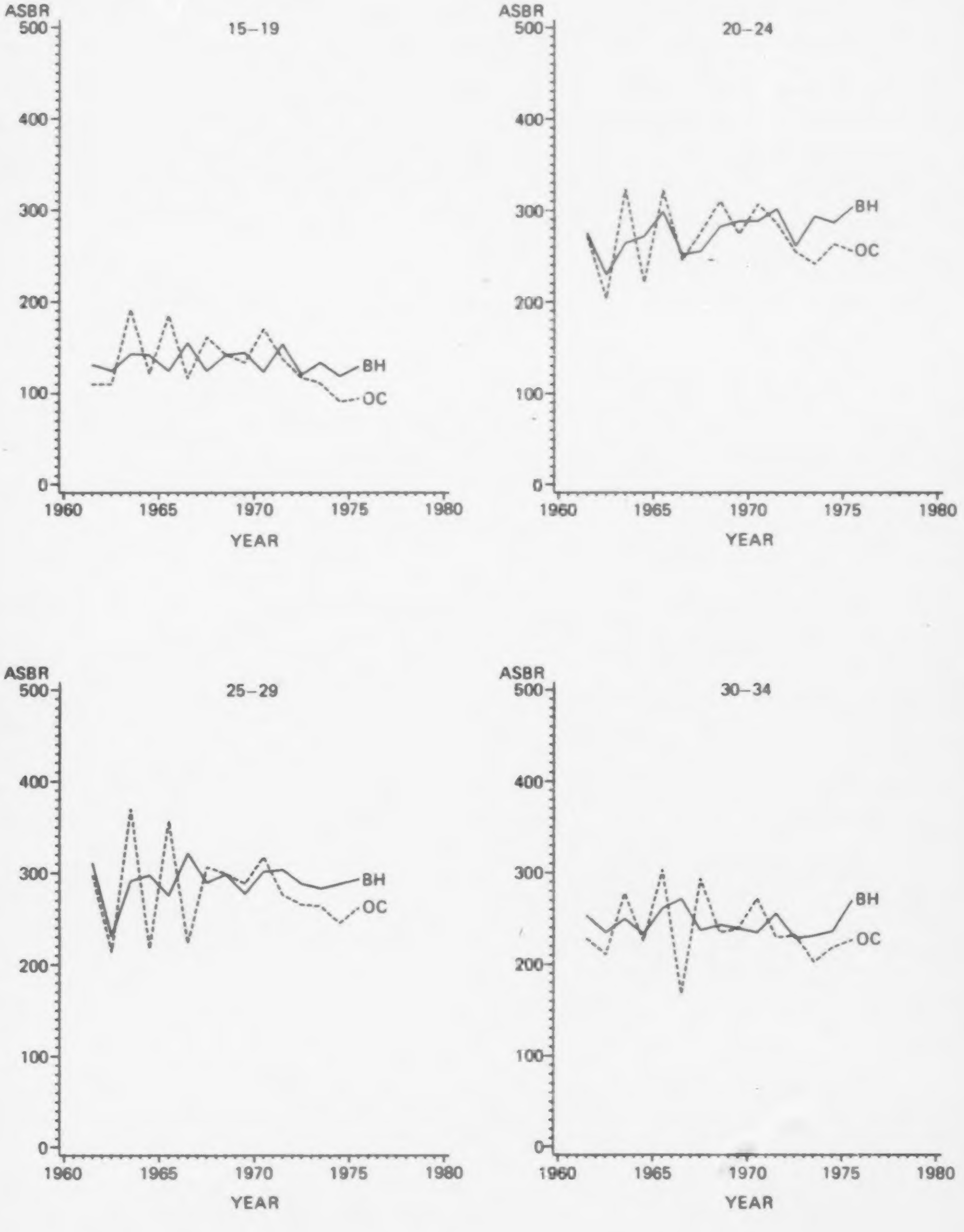


FIGURE 2. *(continued)*

B. Pakistan

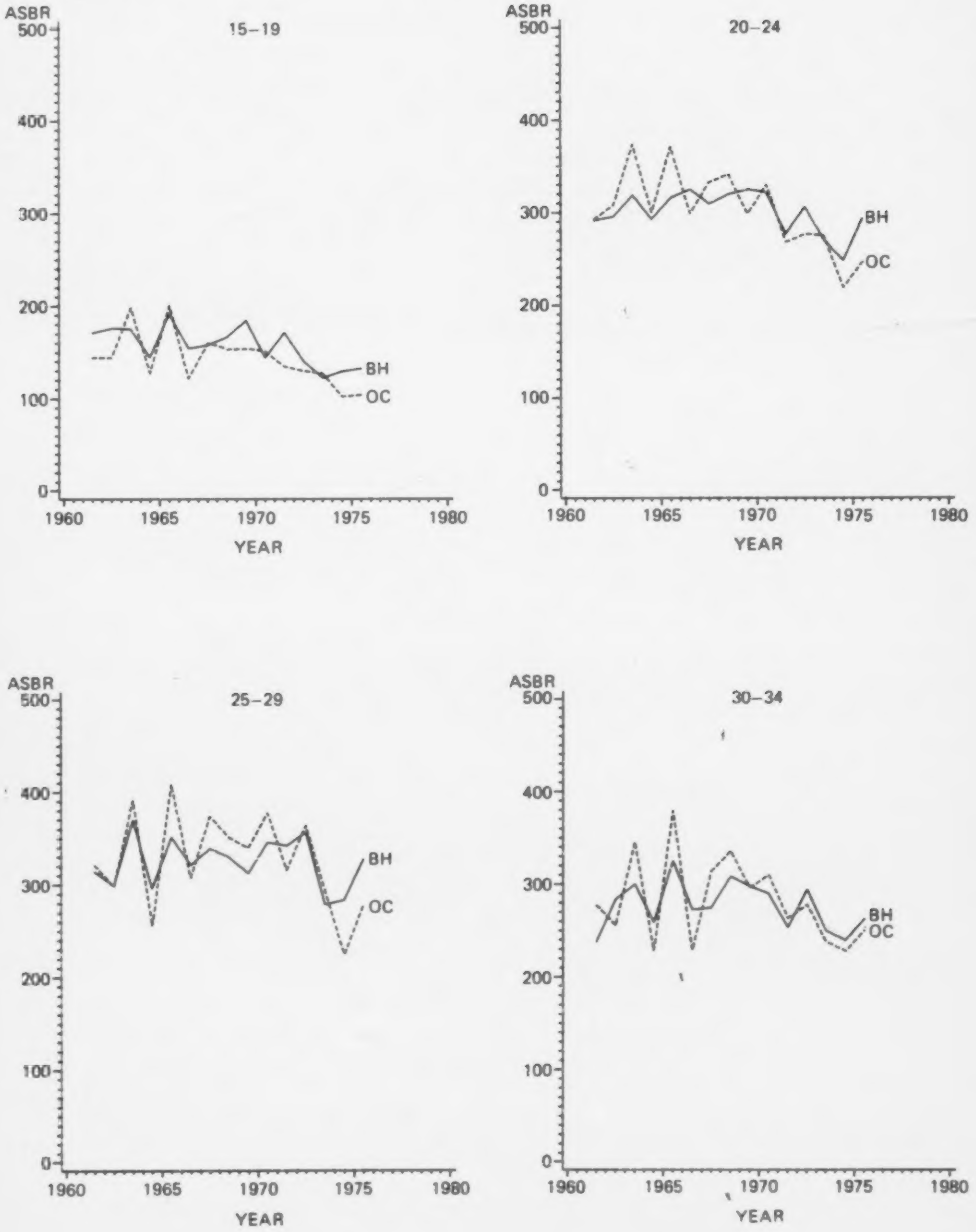


FIGURE 2. *(continued)*

C. Sri Lanka

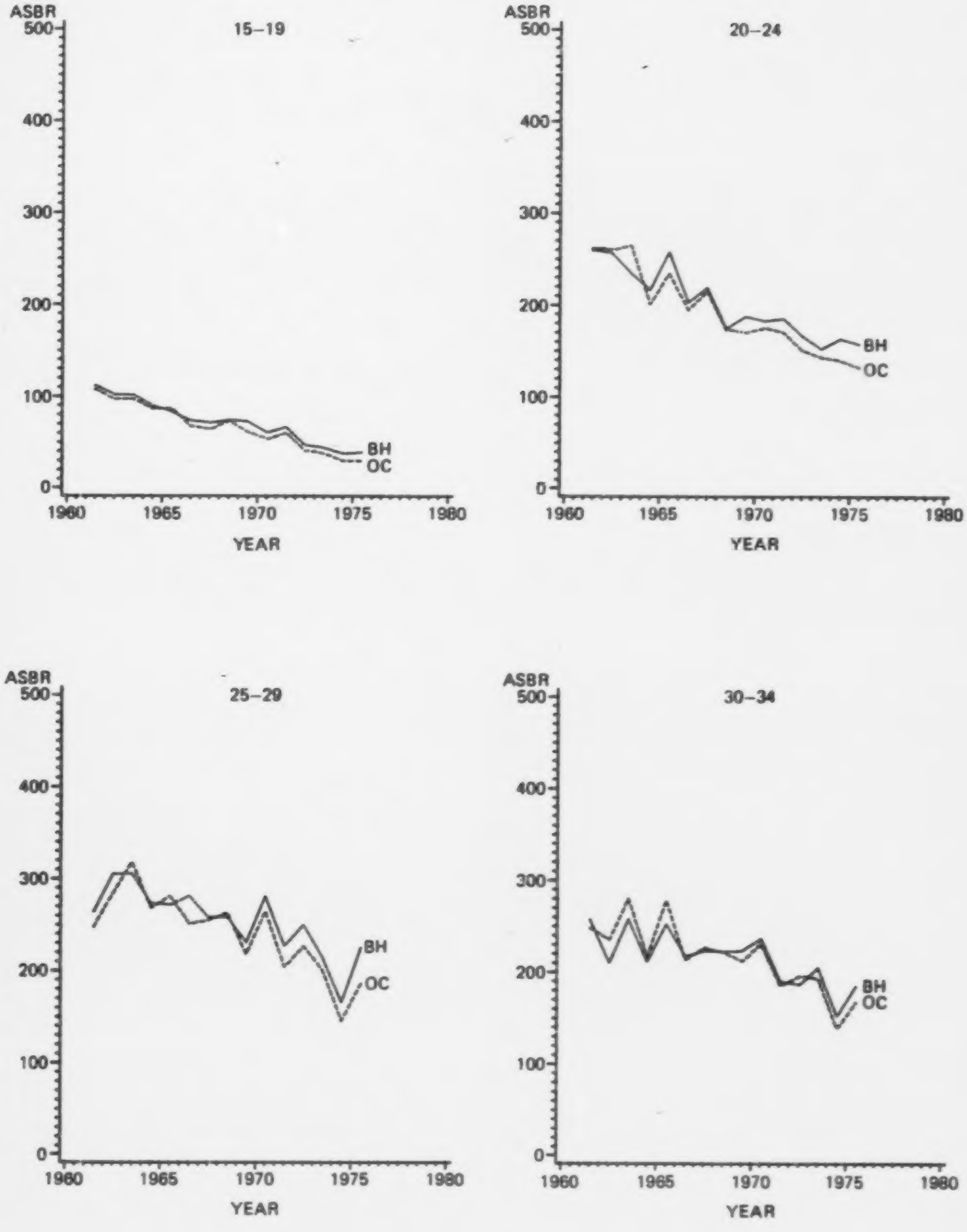


FIGURE 2. *(continued)*

D. Dominican Republic

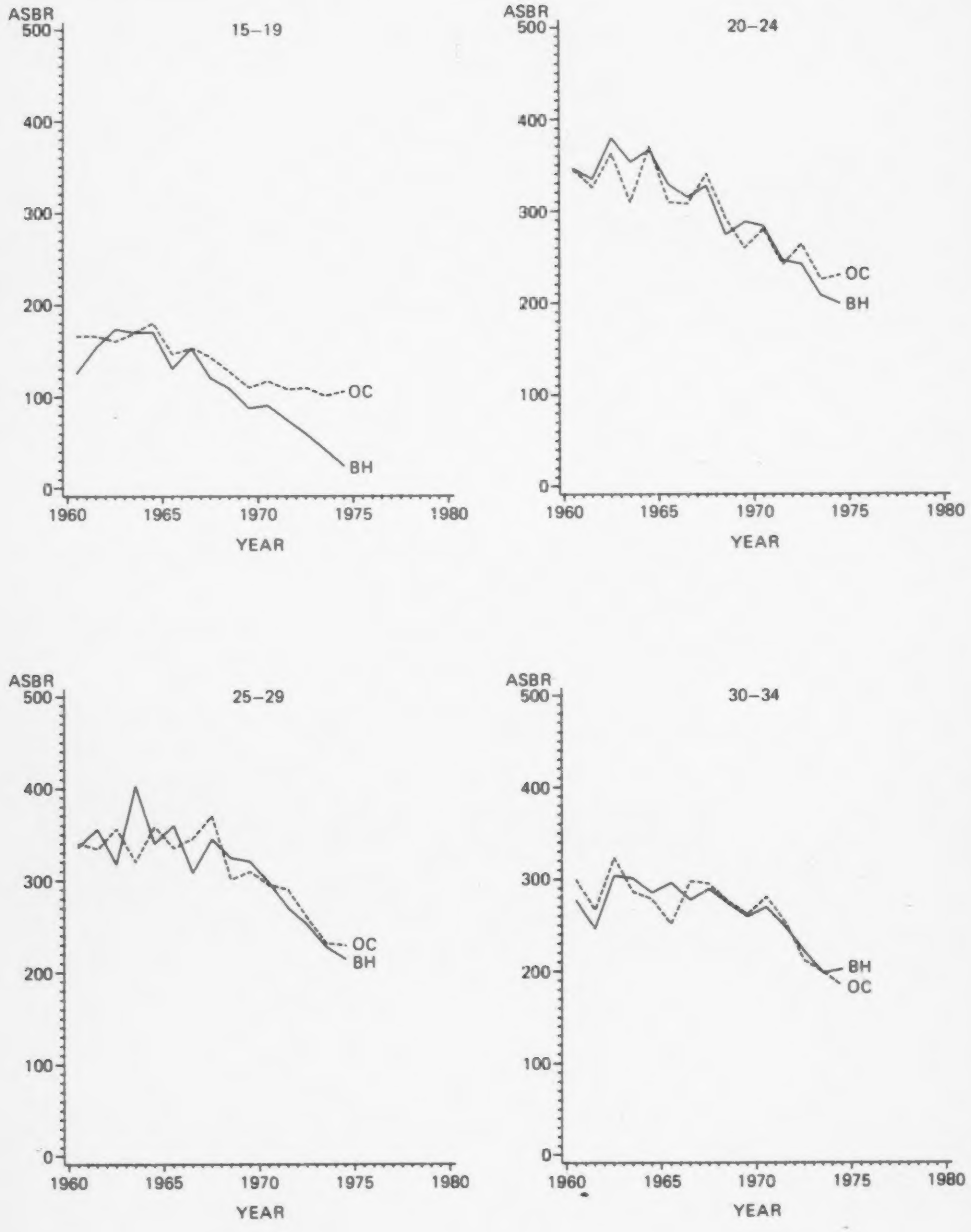


FIGURE 2. *(continued)*

E. Korea

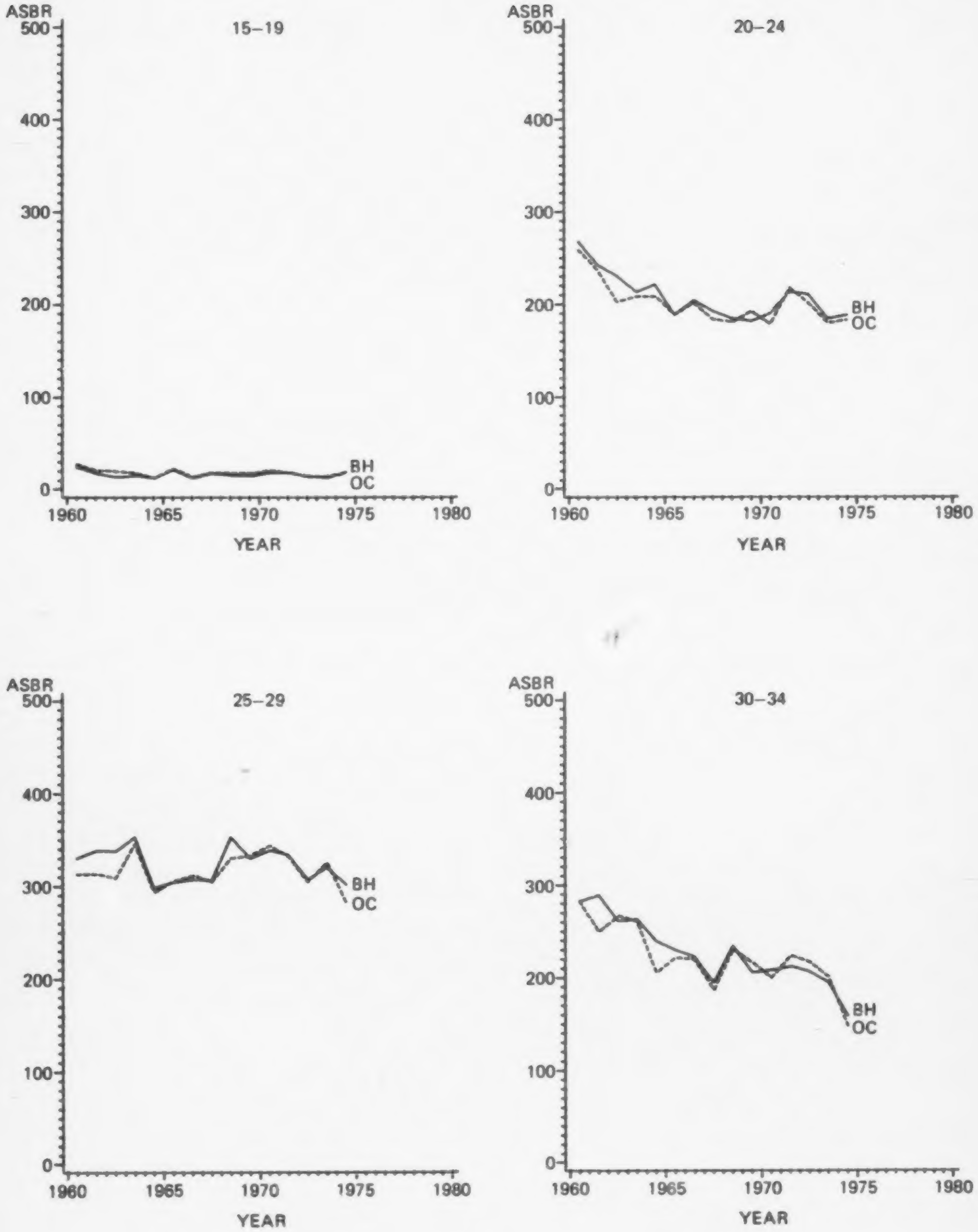


FIGURE 2. *(continued)*

F. Syria

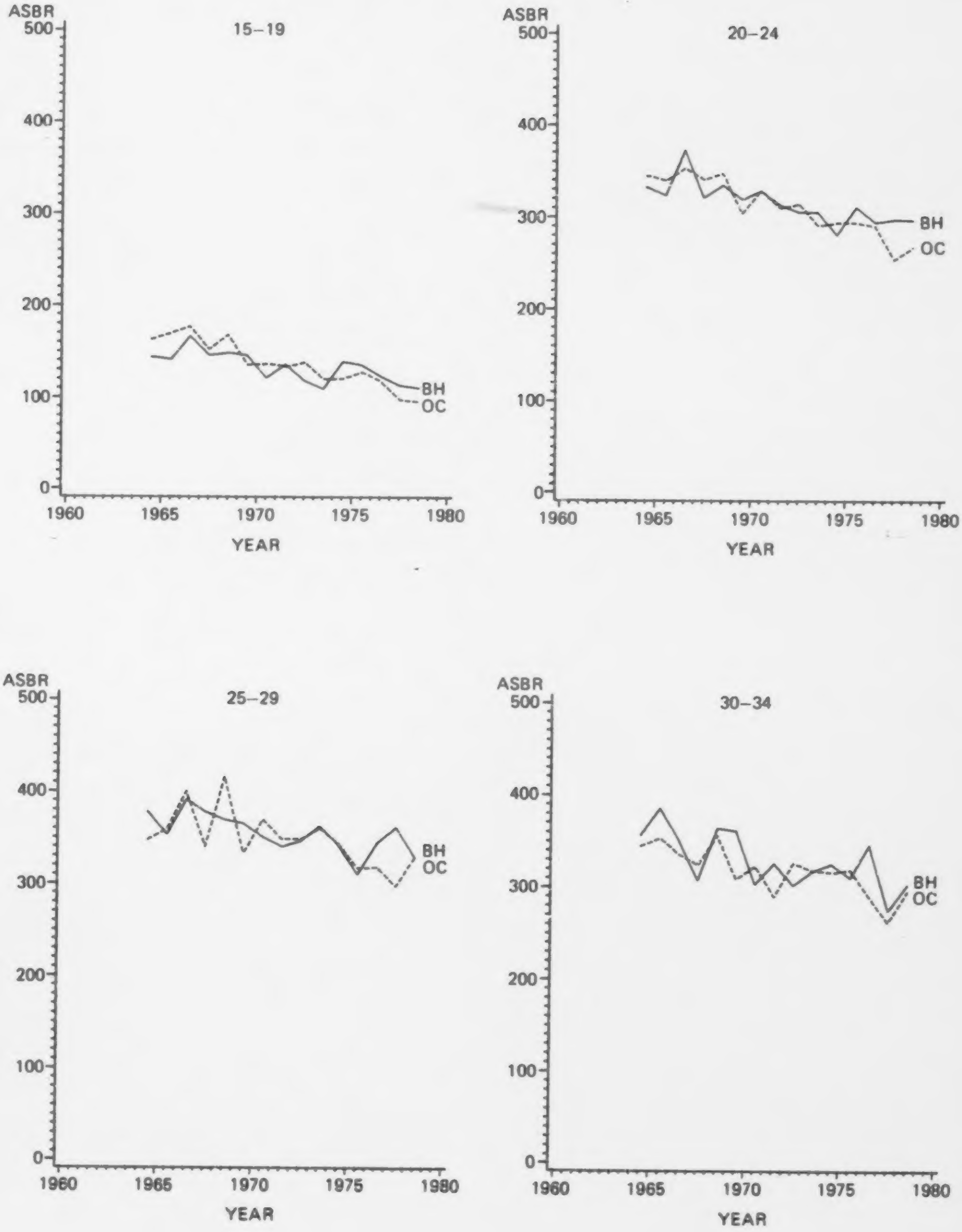


FIGURE 2. *(continued)*

G. Indonesia

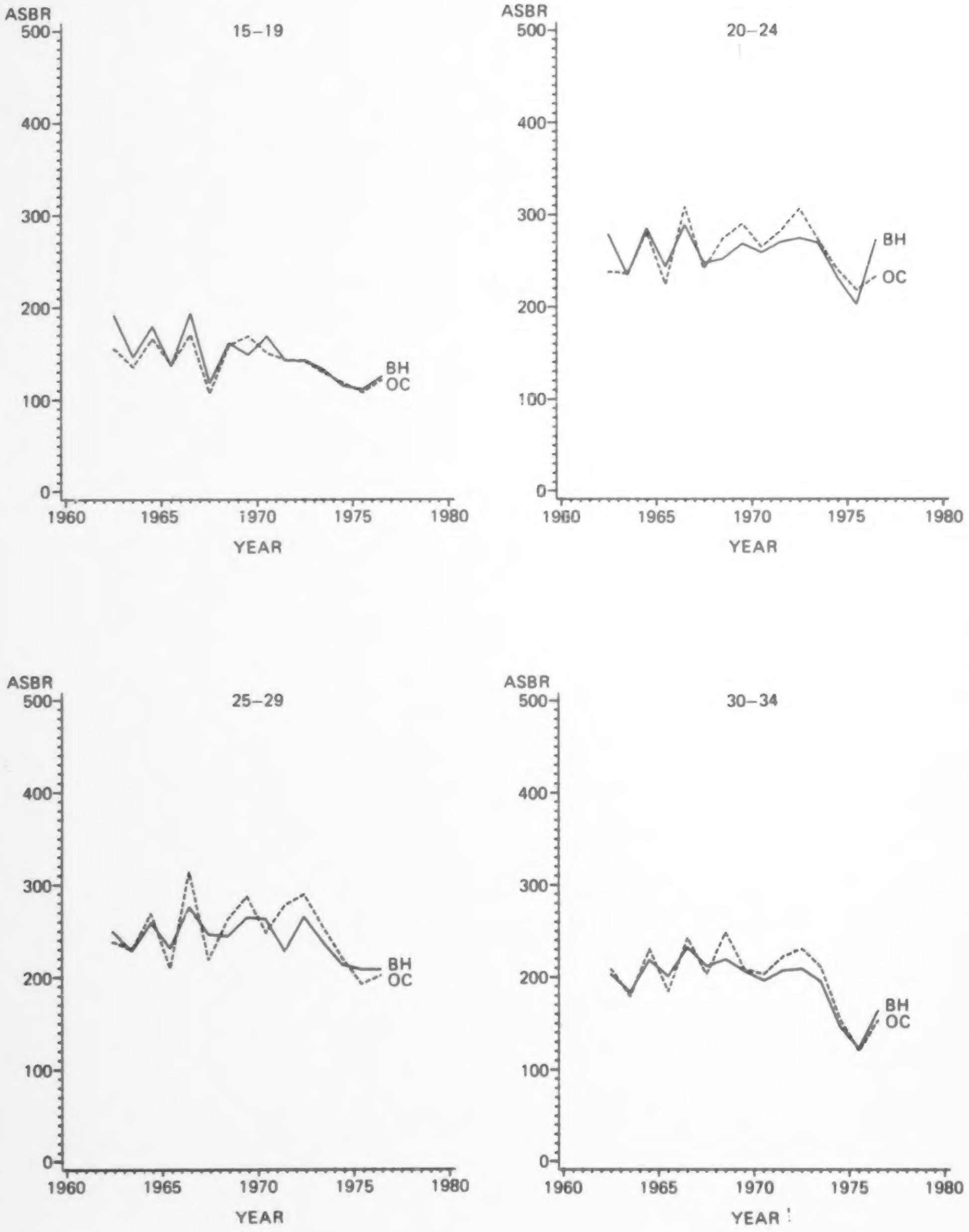
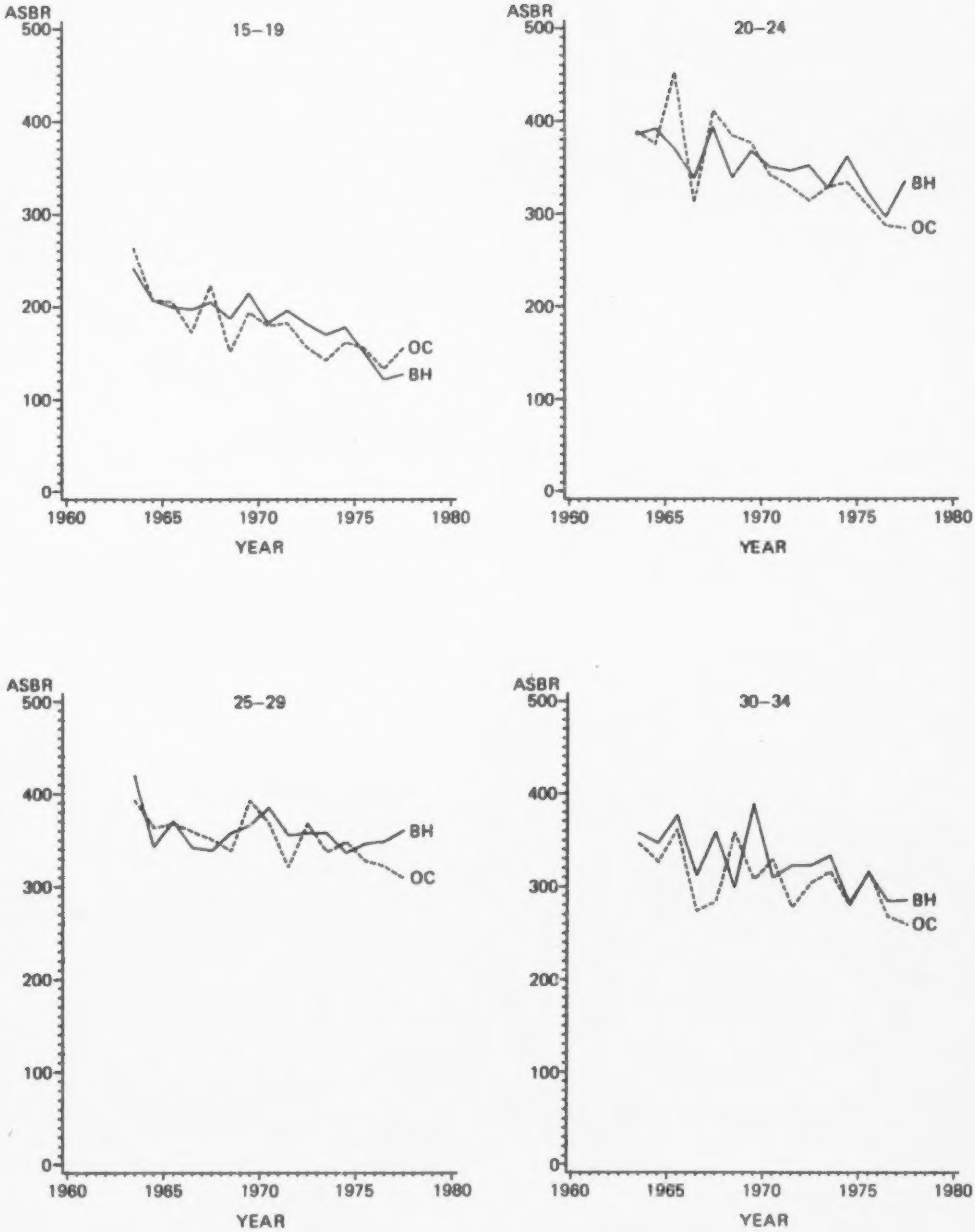


FIGURE 2. *(continued)*

H. Kenya



children. On the whole, the estimates based on birth histories show little change over time, indicating an absence of fertility decline, and the comparatively minor year-to-year fluctuations do not parallel very closely those derived from own children. The results seem either to contradict our hypothesis that fertility trends based alternatively on birth histories and own children reflect the same age reporting errors, or to suggest that the survey takers made exceptional efforts, through probing, to achieve a degree of consistency in the reporting of the timing of birth events in the birth histories that left few traces of age misreporting.

The impressively smooth results from birth histories may have something to do with the Takeshita method of collecting birth histories. This method, which was used in Nepal but not in most other WFS countries, makes special efforts to obtain accurate age data (Jemai and Singh, 1984). The smooth results from the birth histories may also be related to extensive imputation of dates of events collected in the birth histories (Chidambaram and Sathar, forthcoming). But imputation cannot be the main reason for the smooth trend from the Nepalese birth histories, because, as we shall see, this trend is much less smooth in Pakistan, where imputation was just as extensive as in Nepal. If age misreporting is the principal cause of whatever year-to-year distortions remain in the fertility trend estimates for Nepal, then it is apparent that little or no effort was made to render birth dates in the individual sample and ages in the household sample consistent with each other.

Panel A of Figure 2 for Nepal shows similar graphs for age-specific birth rates. The pattern is rather similar to that for the CFR in Figure 1, except that the graphs are considerably more jagged for older women than for younger women. We interpret this to mean that older women provide less accurate reports of ages and birth dates for themselves and their children than do younger women.

Panel B in Figure 1 and 2 shows results for Pakistan. The pattern of own-children estimates is quite similar to that for Nepal, with pronounced fertility fluctuations early in the estimation period, substantial fertility decline subsequently, and a small upturn in the year immediately preceding the survey; but age misreporting seems more severe, as indicated by more jagged patterns. Again major peaks in the fertility trend occur in the 11th and 13th years previous to the survey, corresponding to heaping on ages 10 and 12. Consonant with our initial hypothesis, the fertility trends estimated by the own-children method are considerably more jagged than those estimated from birth histories, and they show a similar pattern of year-to-year fluctuations. Peaks and troughs in the estimated trends derived by the two methods coincide rather closely. Regarding age-specific birth rates, this similarity is especially striking for the older age groups 25–29 and 30–34. Thus the Pakistan data tend to support our hypothesis that fertility trends estimated alternatively from birth histories and own children suffer from similar biases due to similar age reporting errors in both data sets.

In Pakistan as in Nepal, independent evidence from the WFS on contraceptive use rates, which are below 5 percent, suggests that very little real fertility decline occurred over the estimation periods considered here. Whatever real fertility decline did occur in Pakistan was almost certainly confined largely to the 15–19 age group, owing to a slow but steady rise in mean age at marriage over the past two decades. Yet Panel B of Figure 2 shows estimated fertility declines during the five years or so immediately preceding the survey that are as great or greater at the older reproductive ages as at 15–19. This suggests that the estimated fertility declines are largely spurious.

Results for the third country in Group 1, Sri Lanka, are shown in Panel C of Figures 1 and 2. The trends estimated alternatively from birth histories and own children show annual fluctuations that tend to rise and fall together, and this pattern again supports our hypothesis that the two trends are similarly biased by age reporting errors. There tend to be peaks in the 6th, 9th, 11th, and 13th years before the survey, corresponding to heaping on ages 5, 8, 10, and 12. The heaping is comparatively minor, however, in keeping with the comparatively accurate age reporting that is known to characterize Sri Lanka (Ratnayake, Retherford, and Sivasubramaniam, 1984). Heaping is considerably worse for older than for younger women, and this probably reflects much better age reporting by younger women. The sharp gradient in the quality of age reporting between older and younger women may in turn be related to the rapid improvement in public education in Sri Lanka over the previous two decades, particularly for women.

In Sri Lanka as well as in Nepal and Pakistan, there tends to be a small fertility upturn in the year immediately preceding the survey. Overall, the recurring pattern of fertility peaks corresponding to children's ages 0, 8, 10, and 12 strongly suggests that the observed peaks and troughs in the fertility trends are primarily due to age misreporting and do not reflect real annual fluctuations in fertility. (Note, however, that sampling errors for single-year rates are large; see Little, 1982.)

We now come to the Group 2 countries, for which, it will be recalled, the individual sample is embedded in a considerably larger household sample. Results for Dominican Republic are shown in Panel D of Figures 1 and 2. Figure 1 shows that trends estimated alternatively from birth histories and own children coincide reasonably closely, except for the five years immediately preceding the survey, where fertility declines more steeply for the birth history estimates than for the own-children estimates. In the estimates derived by the own-children method, there appears to be some heaping on ages 4, 7, 10, and 12, corresponding to local peaks in the fertility trend in the 5th, 8th, 11th, and 13th years before the survey. (Nepal, Pakistan, and Sri Lanka, it will be recalled, also showed heaping on ages 10 and 12.) The trend estimated from birth histories also shows local peaks in the 5th and 8th years before the survey, but not in the 11th and 13th years; instead, it peaks in the 12th year before the survey. Age reporting errors, described in a previous WFS study (Guzman, 1980), are implicated in these patterns, despite their inconsistencies.

Panel D of Figure 2 shows that the relatively steep fertility decline estimated from birth histories during the five years immediately preceding the survey is due mainly to discrepancies between the birth history and own-children trends at maternal ages 15–19, much less so to discrepancies at ages 20–24, and hardly at all to discrepancies at ages 25–29 and 30–34. Possibly age-specific proportions ever-married from the household sample were underestimated at the younger reproductive ages, resulting in an excessive deflation of birth rates for ever-married women at these ages when these latter rates were effectively multiplied through by age-specific proportions ever-married to estimate birth rates for women of all marital statuses combined. Such an error would result in fertility underestimates derived from the birth histories. Given well-known difficulties in assessing the extent of consensual unions (which are especially prevalent at the younger reproductive ages) as opposed to formal unions in many Caribbean countries, this seems a plausible source of error.

The relatively smooth estimated fertility decline since 1965 in the

Dominican Republic suggests that age misreporting problems are not severe and that the downward trend in fertility is real. This impression is reinforced by information on contraceptive use rates, which the WFS found to be substantial: 97 percent of eligible women knew of at least one modern contraceptive method, and 26 percent were using one (Hobcraft and Rodriguez, 1982).

It is noteworthy that fertility in Dominican Republic declines fastest at the peak reproductive ages, 20–24 and 25–29, indicating that birth control for both spacing and limiting started at about the same time. This pattern, while not unprecedented, is not the most common pattern observed in developing countries, where fertility more usually declines first at 15–19, due to rising age at marriage (more common in Asia than in Latin America), and at ages above 30, due to limiting behavior, and only somewhat later at 20–24 and 25–29 when birth control for spacing children starts to spread.

Results for Korea, the second country in Group 2, are shown in Panel E of Figures 1 and 2. In Figure 1, the CFR shows a decline in the 1960s, a temporary rise in the late 1960s and early 1970s, and resumption of decline in the 1970s. The temporary fertility resurgence in the late 1960s and early 1970s has also been observed in fertility trends estimated from other sources (see, for example, Retherford, Cho, and Kim, 1983) and seems to be real. The resurgence is most noticeable for age-specific birth rates at ages 20–24 and 25–29, as shown in Figure 2, which suggests that the resurgence was due to shifts in the timing of births due to unprecedented prosperity in the late 1960s and early 1970s, rather than to a temporary reversal of the downward trend of completed fertility. Age reporting is known to be very accurate in Korea, and there is no indication in Figures 1 and 2 that the small annual fluctuations in the two sets of fertility trends based alternatively on birth histories and own children reflect common patterns of age misreporting, which is largely absent.[1]

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[1] There appear to be errors in the current version of the Korea household tape. The proportions ever-married by single years of age computed from the tape do not agree with those published in the First Country Report. The proportions from the current tape are substantially too low at the younger reproductive ages and therefore yield fertility estimates from birth histories that are substantially too low. The proportions from the First Country Report, which agree closely with similar proportions computed from the 1975 Census, appear to be correct and were used instead for computing birth rates for all women (i.e., all marital statuses combined) from the birth histories. Another

Results for Syria, the third country in Group 2, are shown in Panel F of Figures 1 and 2. The CFR trends estimated alternatively from birth histories and own children in Figure 1 show quite good agreement during all but the most recent three years of the estimation period, where the trend from own children drops below the trend from birth histories. This pattern of coincidence and discrepancy tends to be reflected also in the age-specific birth rate trends in Figure 2, especially at the peak reproductive ages 20–24 and 25–29. The peaks and troughs of the fertility trends estimated alternatively from birth histories and own children do not coincide very consistently.

As mentioned, the Group 3 countries, Indonesia and Kenya, have the greatest degree of mutual contamination between birth histories and own children, since both the individual and household schedules were administered during the same interview. We examine Indonesia first, in Panel G of Figures 1 and 2. As anticipated, the peaks and troughs of the fertility trends estimated alternatively from birth histories and own children coincide rather well, and, as hypothesized, the oscillations over time between peaks and troughs tend to be more pronounced for the own-children estimates than for the birth history estimates. The pattern of peaks and troughs resembles that for Nepal and Pakistan, discussed earlier, namely peaks corresponding to children's ages 10 and 12 and an apparent fertility decline in the five years or so immediately preceding the survey with a slight upturn in the year just before the survey.

As mentioned earlier, an additional comparison is possible in the case of Indonesia, because the WFS household sample, known as SUPAS III, was embedded in a much larger household survey known as SUPAS II. Figure 3 compares own-children estimates of trends in the total fertility rate (TFR), covering the entire reproductive age range 15–49, derived from SUPAS II and SUPAS III. The figure shows that the pattern of peaks and troughs due to age misreporting is quite similar in the two surveys, but it is considerably more

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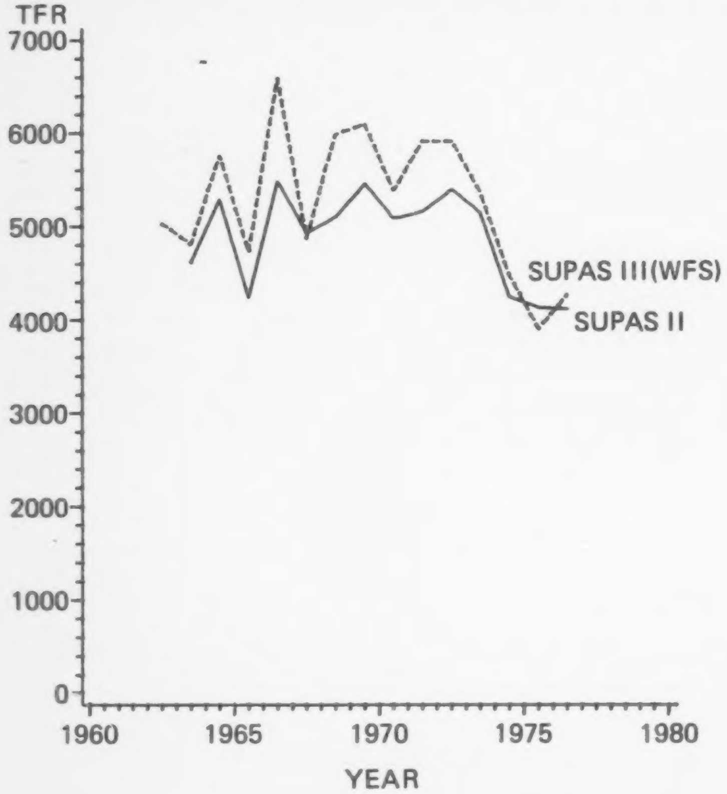
discrepancy is that the current household tape contains 1,232 more ever-married women and 1,482 more persons than the household sample as reported in the First Country Report. We have not been able to pinpoint the errors in the household tape, and it is possible that they also distort somewhat the fertility estimates derived by the own-children method that are reported here. Staff of the International Statistical Institute are currently investigating this problem.

FIGURE 3. Trends in total fertility rates estimated by the own-children method: SUPAS II and SUPAS III, Indonesia



pronounced in SUPAS II than in the WFS SUPAS III. This pattern of discrepancies again tends to support our hypothesis that the collection of birth histories results in a good deal of internal consistency checking that ultimately provides better, or at least more consistent, estimates of women's and children's ages and the timing of birth events. The age-event chart used as an aid in collecting birth histories in Indonesia, as in Nepal, probably contributed to the quality of the age data obtained (Jemai and Singh, 1984; Supraptilah, 1982).

The last country in Group 3, and the last to be considered in this study, is Kenya, fertility trends for which are shown in Panel H of Figures 1 and 2. Again contamination between the individual and household samples is severe. As in the case of Indonesia, the CFR(35) trends estimated alternatively from birth histories and own children coincide rather well, although the trend derived from own children tends to be somewhat lower than the trend derived from birth histories in the first seven years or so immediately preceding the survey. Again there is some indication of heaping on ages 8, 10, and 12, corresponding to fertility peaks in the 9th, 11th, and 13th years before the survey; a subsequent decline in fertility; and a slight upturn in the year just preceding the survey. But this pattern is somewhat inconsistent when one examines the age-specific birth rate trends in Figure 2, and perhaps not too much significance should be attached to it. As in the other countries, year-to-year fluctuations tend to be larger in the own-children estimates than in the birth history estimates. Again this suggests that even though the household and individual schedules were administered in the same interview, birth dates and ages were not always rendered consistent in the two schedules. The data for Kenya tend also to support our original hypothesis that distortions in fertility trends estimated alternatively from birth histories and own children reflect similar age reporting errors. The quality of age data in the Kenyan WFS may have been enhanced by unusually detailed probes on age; however, age heaping in the WFS is not markedly different from age heaping in a previous survey that did not include such probes (Jemai and Singh, 1984; Henin, Korten, and Werner, 1982).

CONCLUSION

From the ages of surviving children matched to a woman in the own-children procedure, one can infer birth dates, yielding a partial birth history that omits births who later died or moved out of the household before being enumerated in the survey. In effect, the own-children adjustments for mortality and unmatched children compensate for these omissions. Thus the own-children method may be regarded as fertility estimation from incomplete maternity histories.

Given this similarity between the own-children method and the birth history method, the initial hypothesis of this paper was that fertility trends estimated alternatively from birth histories and own children tend to suffer from similar errors in age reporting that should be reflected in roughly coinciding peaks and troughs in the estimated year-to-year fertility trends. It was further hypothesized that the distortions due to age misreporting should be more pronounced in the trend derived from own children than in the trend derived from birth histories, since the latter offer more opportunity to detect and correct internal inconsistencies while interviewing respondents. These hypotheses are supported fairly strongly by the results for Pakistan, Sri Lanka, Indonesia, and Kenya, but only weakly or not at all by the results for Nepal, Dominican Republic, Korea, and Syria. In the case of Nepal, we speculate that an extraordinary effort was made to obtain birth histories with a smooth sequence of birth intervals, and that this effort left little trace of the typical South Asian pattern of age misreporting so evident in the own-children estimates. This may have been due partly to use of an age-event chart of the type recommended by Takeshita for the collection of birth histories. In Korea, age reporting is known to be quite accurate, and the impact of age misreporting on the estimated fertility trends seems to be minimal. It likewise appears that in Dominican Republic and Syria age misreporting does not seriously distort the fertility estimates, although the age data are not as free from misreporting as in the Korean case.

None of the countries examined show much indication of a bunching of births in the birth histories in the vicinity of five to ten years before the survey; fertility ten to fourteen years before the survey tends to be about as high or higher than fertility five to ten years before the survey. Moreover, in at least one case, Pakistan, fertility during the five years immediately preceding the survey seems implausibly low, probably due to a pattern of age exaggeration stemming from upward rounding of children's ages. This mechanism probably operates in Indonesia as well, although independent evidence indicating a rapid rise in contraceptive use suggests that part of the indicated fertility decline in Indonesia is real. On the whole, Potter's hypothesis about misplacement of events, which assumes bunching of births five to ten years before the survey and accurate reporting of births during the first five years or so immediately preceding the survey, does not receive much support from these data. This finding reinforces previous work by Blacker and Brass (1979), who found evidence that recent dates of birth obtained from birth histories often tend to be pushed backward from rather than toward the survey date.

Overall, the data suggest that age misreporting is not an insuperable obstacle to collecting birth histories that yield reasonably accurate estimates of fertility trends. In this regard, it would be especially interesting and potentially useful to study in more detail the procedures by which the Nepal survey achieved such unusual accuracy in its birth histories despite severe age misreporting problems evident in the estimates based on own children. In half of the WFS surveys examined here, however, patterns of age misreporting are clearly reflected not only in fertility trends estimated from own children but also in trends estimated from birth histories.

In most cases, the agreement between the fertility estimates derived alternatively from own children and birth histories is impressive. Although this agreement may sometimes reflect common sources of error, the results suggest that household surveys are often adequate for estimating fertility levels and trends.

APPENDIX TABLE 1. Age-specific birth rates and values of CFR(35) estimated alternatively from birth histories and own children

	ASBR				
	15–19	20–24	25–29	30–34	CFR(35)
A. Nepal					
Birth histories					
1961	131	275	311	253	4845
1962	124	229	231	234	4095
1963	143	264	291	250	4737
1964	141	272	297	233	4714
1965	124	298	275	261	4792
1966	155	252	322	272	4998
1967	124	255	289	237	4527
1968	142	282	299	243	4827
1969	144	288	277	238	4739
1970	123	288	301	234	4732
1971	153	302	303	255	5067
1972	120	261	288	228	4487
1973	134	294	283	231	4706
1974	118	286	288	236	4644
1975	129	304	294	269	4978
Own children					
1961	110	271	297	228	4526
1962	109	203	214	210	3682
1963	192	323	370	277	5807
1964	121	221	217	225	3918
1965	185	322	357	303	5834
1966	116	245	223	167	3755
1967	161	277	306	294	5186
1968	142	310	298	235	4924
1969	133	274	288	239	4668
1970	170	306	317	272	5324
1971	137	285	276	229	4636
1972	117	254	265	232	4338
1973	110	241	263	202	4084
1974	91	263	245	218	4086
1975	94	255	262	226	4188

APPENDIX TABLE 1. *(continued)*

	ASBR				
	15–19	20–24	25–29	30–34	CFR(35)
B. Pakistan					
Birth histories					
1961	171	292	314	238	5072
1962	176	295	298	283	5264
1963	174	318	370	300	5811
1964	144	292	296	258	4954
1965	192	316	351	325	5916
1966	154	325	321	272	5359
1967	158	309	339	274	5400
1968	166	320	330	308	5615
1969	184	324	312	297	5589
1970	144	321	345	290	5498
1971	171	276	342	253	5208
1972	140	306	357	294	5484
1973	122	270	278	249	4600
1974	130	248	284	239	4500
1975	132	294	328	262	5080
Own children					
1961	144	293	321	277	5174
1962	144	308	297	255	5022
1963	198	373	391	345	6536
1964	127	300	255	228	4549
1965	200	371	409	379	6794
1966	122	298	307	228	4776
1967	159	332	374	313	5894
1968	153	341	350	336	5898
1969	154	298	339	296	5434
1970	150	330	377	310	5835
1971	134	268	315	263	4897
1972	129	276	364	278	5233
1973	126	274	293	237	4650
1974	102	218	224	227	3860
1975	104	246	278	250	4392

APPENDIX TABLE 1. *(continued)*

	ASBR				
	15–19	20–24	25–29	30–34	CFR(35)
C. Sri Lanka					
Birth histories					
1961	111	259	264	256	4455
1962	101	256	305	210	4358
1963	101	234	305	258	4488
1964	89	216	273	211	3944
1965	83	258	271	252	4318
1966	73	202	281	217	3864
1967	71	219	258	223	3852
1968	74	174	258	222	3640
1969	72	187	230	223	3562
1970	60	182	281	236	3800
1971	66	185	227	189	3337
1972	47	166	250	186	3238
1973	44	152	215	205	3076
1974	37	163	166	152	2586
1975	39	157	225	185	3028
Own children					
1961	107	261	248	247	4318
1962	96	259	284	234	4368
1963	96	264	317	280	4788
1964	86	200	268	217	3850
1965	86	234	280	278	4393
1966	67	194	251	213	3622
1967	63	215	255	226	3794
1968	73	172	262	221	3645
1969	60	170	218	211	3294
1970	53	175	264	230	3610
1971	60	170	204	185	3094
1972	40	150	226	195	3061
1973	37	142	200	192	2860
1974	29	139	145	138	2258
1975	29	132	186	167	2566

APPENDIX TABLE 1. *(continued)*

	ASBR				
	15–19	20–24	25–29	30–34	CFR(35)
D. Dominican Republic					
Birth histories					
1960	126	346	336	277	5422
1961	153	334	356	246	5443
1962	173	379	317	303	5862
1963	169	353	403	300	6126
1964	170	366	340	285	5803
1965	130	328	360	296	5572
1966	152	314	308	277	5258
1967	120	327	345	289	5402
1968	108	274	324	273	4896
1969	87	288	320	259	4768
1970	90	283	297	269	4696
1971	74	246	269	248	4184
1972	59	241	251	221	3864
1973	42	208	227	197	3372
1974	24	199	214	202	3192
Own children					
1960	166	344	340	299	5742
1961	165	325	334	266	5452
1962	160	362	356	323	6004
1963	169	308	320	285	5412
1964	180	370	358	278	5925
1965	146	309	335	251	5200
1966	152	307	345	297	5508
1967	142	340	370	294	5732
1968	127	291	301	275	4967
1969	109	259	309	261	4693
1970	116	280	294	280	4854
1971	108	241	289	253	4451
1972	109	263	259	211	4212
1973	100	225	231	198	3773
1974	105	230	229	183	3735

APPENDIX TABLE 1. *(continued)*

	ASBR				
	15–19	20–24	25–29	30–34	CFR(35)
E. Korea					
Birth histories					
1960	24	267	330	282	4514
1961	17	242	338	289	4428
1962	13	230	337	261	4204
1963	15	213	353	263	4216
1964	12	221	298	239	3852
1965	21	188	304	229	3712
1966	12	204	307	222	3730
1967	17	192	305	194	3540
1968	15	184	353	234	3932
1969	14	181	329	205	3642
1970	18	190	338	208	3767
1971	18	213	333	212	3882
1972	14	210	307	206	3680
1973	12	184	320	194	3552
1974	19	188	301	158	3330
Own children					
1960	27	258	313	282	4400
1961	20	236	313	249	4090
1962	19	202	308	266	3975
1963	17	208	345	260	4150
1964	12	208	293	205	3590
1965	22	188	305	221	3680
1966	13	201	311	219	3720
1967	18	183	304	186	3455
1968	17	180	330	230	3785
1969	17	192	332	216	3785
1970	20	178	343	199	3700
1971	17	217	331	223	3940
1972	13	200	304	216	3665
1973	14	179	325	200	3590
1974	17	183	281	147	3140

APPENDIX TABLE 1. *(continued)*

	ASBR				
	15–19	20–24	25–29	30–34	CFR(35)
F. Syria					
Birth histories					
1964	143	332	378	356	6048
1965	141	323	353	385	6006
1966	166	373	391	350	6402
1967	145	321	377	307	5749
1968	148	334	369	364	6071
1969	145	319	365	360	5942
1970	121	328	351	303	5513
1971	136	313	340	326	5573
1972	118	305	347	302	5356
1973	108	305	362	317	5468
1974	139	281	342	325	5430
1975	135	311	310	310	5327
1976	123	294	344	346	5536
1977	113	298	362	274	5234
1978	110	296	328	303	5188
Own children					
1964	163	344	348	345	5999
1965	169	339	359	352	6096
1966	177	352	400	335	6319
1967	151	340	340	324	5774
1968	167	347	416	356	6428
1969	135	304	333	308	5396
1970	136	329	370	323	5786
1971	133	310	348	289	5400
1972	138	314	348	326	5630
1973	119	291	360	318	5440
1974	120	294	343	316	5364
1975	127	293	317	319	5280
1976	117	290	318	289	5074
1977	97	254	297	262	4551
1978	95	268	330	295	4936

APPENDIX TABLE 1. *(continued)*

	ASBR				
	15–19	20–24	25–29	30–34	CFR(35)
G. Indonesia					
Birth histories					
1961	191	278	249	203	4606
1962	146	234	227	183	3949
1963	179	285	258	218	4703
1964	136	243	231	200	4048
1965	193	288	276	232	4946
1966	118	247	246	211	4107
1967	161	251	244	219	4374
1968	149	268	264	206	4429
1969	168	258	262	196	4422
1970	142	270	227	207	4228
1971	142	274	265	208	4446
1972	132	268	237	195	4156
1973	114	231	213	146	3522
1974	111	201	208	122	3210
1975	125	272	208	164	3849
Own children					
1961	154	238	237	208	4188
1962	135	235	229	179	3885
1963	166	281	268	230	4722
1964	138	223	209	184	3767
1965	170	308	314	242	5170
1966	106	240	218	203	3836
1967	159	273	262	248	4710
1968	168	289	287	208	4760
1969	150	264	248	202	4320
1970	142	281	278	222	4615
1971	141	306	289	231	4830
1972	128	272	254	210	4320
1973	117	240	220	154	3654
1974	107	218	192	120	3184
1975	121	232	201	153	3539

APPENDIX TABLE 1. *(continued)*

	ASBR				
	15–19	20–24	25–29	30–34	CFR(35)
H. Kenya					
Birth histories					
1963	240	385	419	357	7008
1964	206	392	343	347	6436
1965	199	369	371	377	6578
1966	196	338	342	312	5940
1967	204	394	339	359	6478
1968	187	338	358	298	5904
1969	214	367	366	389	6680
1970	182	350	385	310	6130
1971	195	346	355	323	6093
1972	181	352	358	323	6066
1973	169	327	358	333	5938
1974	177	361	336	282	5786
1975	150	325	347	315	5683
1976	121	296	349	284	5246
1977	127	334	360	286	5536
Own children					
1963	262	388	392	345	6938
1964	206	374	363	326	6348
1965	204	452	368	361	6924
1966	172	311	359	274	5576
1967	222	411	350	284	6334
1968	150	384	338	358	6148
1969	193	377	392	307	6342
1970	178	341	368	329	6082
1971	182	329	321	277	5547
1972	156	313	368	304	5704
1973	141	328	337	316	5614
1974	161	333	348	279	5608
1975	154	310	327	316	5536
1976	132	286	321	267	5036
1977	155	284	308	259	5028

REFERENCES

Afzal, M.

1974 *The Population of Pakistan.* CICRED Monograph Series. Islamabad: Pakistan Institute of Development Economics.

Blacker, J., and W. Brass

1979 Experience of retrospective demographic enquiries to determine vital rates. In *The Recall Method in Social Surveys,* eds. L. Moss and H. Goldstein. London: University of London Institute of Education.

Brass, W.

1975 *Methods for Estimating Fertility and Mortality from Limited and Defective Data.* Chapel Hill: Laboratories for Population Statistics, University of North Carolina.

Chidambaram, V.C., and Z.A. Sathar

Forthcoming *Age and Date Reporting.* Comparative Studies Series. London: World Fertility Survey.

Cho, L.J.

1973 The own-children approach to fertility estimation: an elaboration. In Vol. 2, *International Population Conference, Liège 1973,* 263–78. Liège: International Union for the Scientific Study of Population.

Coale, A.J., and P. Demeny

1966 *Regional Model Life Tables and Stable Populations.* Princeton: Princeton University Press.

Goldman, N., A.J. Coale, and M. Weinstein

1979 *The Quality of Data in the Nepal Fertility Survey.* World Fertility Survey Scientific Reports, No. 6. London: International Statistical Institute.

Guzman, J.M.

1980 *Evaluation of the Dominican Republic National Fertility Survey 1975.* Scientific Reports No. 14. London: World Fertility Survey.

Henin, R.A., A. Korten, and L.H. Werner

1982 *Evaluation of Birth Histories: A Case Study of Kenya.* Scientific Reports No. 36. London: World Fertility Survey.

Hobcraft, J., and G. Rodriguez

1982 *The Analysis of Repeat Fertility Surveys: Examples from Dominican Republic.* Scientific Reports No. 29. London: World Fertility Survey.

Jamai, H., and S. Singh

1984 Question design for measurement of selected demographic events. Paper presented at the World Fertility Survey Symposium, London, 24–27 April.

Little, R.J.A.

1982 *Sampling Errors of Fertility Rates from the WFS.* WFS Technical Bulletin No. 10. London: World Fertility Survey.

Potter, J.E.

1977 Problems in using birth-history analysis to estimate trends in fertility. *Population Studies* 31:335–64.

Ratnayake, K., R.D. Retherford, and S. Sivasubramaniam

1984 *Fertility Estimates for Sri Lanka Derived from the 1981 Census.* Colombo: Aitken Spence and Co.

Retherford, R.D.

1978 Single-year computational procedures used in the own-children method of fertility estimation. *Asian and Pacific Census Forum* 4(3):5–8.

Retherford, R.D., Aphichat Chamratrithirong, and Anuri Wanglee

1980 The impact of alternative mortality assumptions on own-children estimates of fertility for Thailand. *Asian and Pacific Census Forum* 6(3):5–8.

Retherford, R.D., and L.J. Cho

1978 Age-parity-specific birth rates and birth probabilities from census or survey data on own children. *Population Studies* 32:567–81.

Retherford, R.D., L.J. Cho, and N.I. Kim

1983 Estimates of current fertility derived from the 1980 census of the Republic of Korea. *Asian and Pacific Census Forum* 9(3):12–15.

Retherford, R.D., and M. Mirza

1982 Evidence of age exaggeration in demographic estimates for Pakistan. *Population Studies* 36:257–70.

Sri Lanka Department of Census and Statistics

1978 *Life Tables 1970–72: Sri Lanka.* Colombo: Department of Census and Statistics.

Supraptilah, B.

1982 *Evaluation of the Indonesian Fertility Survey 1976.* Scientific Reports No. 38. London: World Fertility Survey.

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Population mobility in the People's Republic of China

Sidney Goldstein
and Alice Goldstein

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ABSTRACT Permanent migration has long been recognized as an important mechanism that allows populations to adjust to changing economic conditions. Increasingly, temporary movement–including circulation–has come to be seen as forming another important component in the development process. China today provides a good opportunity for exploring how the two forms of mobility may complement each other and, in so doing, help to control the growth of urban places.

Despite its urban population of 200 million, China has a low level of urbanization (20 percent in 1982); but the 800 million persons in rural areas form a vast reservoir for rural-to-urban migration and for urban growth. Institution of the responsibility system in rural areas has made this situation potentially more acute by fostering a reallocation of labor, leaving many peasants without work.

In attempts to forestall problems inherent in too rapid urbanization, China has instituted a migration policy designed to strictly control changes in permanent residence from rural areas or small urban places to larger cities and to encourage the development of small cities and towns. The policy is enforced through the household registration system, whereby each person has an official place of residence and must obtain official permission to change locations. Household registration is tied to housing, jobs, and grain rations. Within these controls, considerable migration does occur, much of it for job-related reasons or for education. Counterstreams often negate much of the in-migration, especially in big cities; but in some cities, particularly medium-sized ones, migration is an important component of population growth.

As a combined result of the surplus labor associated with the responsibility system and of the opportunities in urban places created by rising urban living standards, temporary mobility has increased greatly. Many peasants engage in temporary construction work in cities. Others live for various periods in cities in connection with work in commune-run enterprises, such as shops and restaurants. Still others, on their own initiative, come to cities to work as housekeepers or to provide a variety of other services. Most visible are those peasants who come temporarily to cities to sell agricultural products or handicrafts in free markets.

Such circulation may involve days, months, or even years away from their place of official registration. Temporary mobility is sanctioned because it is seen as providing benefits without concurrently imposing burdens on the cities. It absorbs a considerable portion of the surplus rural labor; it generates income to fuel a rising standard of living in rural areas; and it meets demands for service workers and other needs associated with improving the quality of life in cities. Most importantly, it provides linkages between rural and urban places. Coupled with a relaxation on restrictions

governing permanent migration from villages to towns, temporary movement may serve as a first step in the development of small, rural-oriented urban centers that are intended to provide employment opportunities and some urban amenities not otherwise available in rural areas. Whether such towns or temporary contacts that peasants have with cities will satisfy the rising consumer demands and aspirations for a better quality of life, or whether the limited exposure to urban life styles will instead increase peasant desires to live in cities remains an open question.

The importance of migration in the complex process by which populations adjust to demographic pressures and by which labor markets achieve equilibrium has been long recognized and extensively studied (Goldstein and Goldstein 1981; Findley 1977, 1982). Researchers and policymakers are increasingly coming to recognize the importance and pervasiveness, both historically and currently, of short-term, temporary movement—circulation—as one response in the wide variety of adjustments that populations make to changing conditions (Pryor 1979; Goldstein 1978; Zelinsky 1971). As yet, however, no consistent definition of circulation has emerged, nor have research instruments been sufficiently developed to collect the appropriate data with which to document the process (Chapman and Prothero 1982). Both the possibilities of household labor reallocation and employment opportunities have been identified as factors determining the extent of population stability and the choice of circulation versus more permanent migration if movement is the chosen response.

How, then, do circulation and migration complement each other in the complex process of modernization and national development? What role does each play in the changing labor force needs of urban and rural places? Research in Africa, Southeast Asia, and Melanesia suggests that short-term movement has played an important role in the development process there, not only from the point of view of the individual or the household, but also from a community and national perspective (Chapman and Prothero 1982). Circulation helps to adjust labor supply and demand regionally or even nationally without the social dislocation that large-scale permanent migration may entail and without placing the added strains on cities that the influx of large numbers of migrants would create. It may also allow for the provision of services through the informal sector that are in short supply otherwise. Concurrently, the flow of funds and ideas that circulation engenders may become a critical component of rural modernization.

Since the mid-1970s, many countries have identified migration and spatial distribution as a severe problem (United Nations 1982:table 49). The concerns with the problems of big cities and with rural-to-urban migration suggest that temporary movement, together with rural development, may provide governments with the basis for alternative distribution policies. Circulation may help to avoid or at least to reduce some of the undesirable effects of permanent migration on the mover and on the origin and destination. We know little about these relations, largely because of the limited research done on temporary movement. As a result, planners and policymakers have been slow to recognize the role circulation may have in the national development process, especially in the redistribution of the labor force.

In this respect, the situation in China may be of particular interest because of that nation's centrally planned economy and explicitly stated and carefully controlled migration policy. Chinese planners have recognized the value of temporary mobility as an alternative to permanent migration and provided for it to some extent in the formal planning process. They have also recognized the need to develop alternative nonagricultural job opportunities in rural areas and small towns in order to absorb surplus rural labor without rapid urban growth, especially of big cities.

The concerted efforts of the Chinese government to control population growth through its one-child family policy have understandably received worldwide attention. Less well known outside China is the considerable attention that Chinese government officials at all levels have given to problems related to the rural-urban distribution of China's population, to the rates of urban growth, and to the relations between employment opportunities and rural and urban development. These concerns have led to the emergence of a clearly articulated policy regarding population movement and the distribution of population between rural and urban places and among urban places of different size.

China's efforts to control population distribution and to achieve orderly urban growth, like its efforts to control fertility, are of critical significance for the future development and modernization of the nation. Moreover, those efforts merit continuing monitoring and evaluation for the lessons they may provide for other developing countries. To the extent that many developing countries have placed even greater importance on problems of population distribution than on those of population growth (United Nations 1980), China's experiences will be of interest for the insights they may provide on how to avoid many negative consequences of too rapid urban growth while realizing the benefits of urbanization for economic development.

After a brief review of the urbanization situation in China, this paper first focuses on the nation's migration policies and the mechanism whereby migration is controlled (the household registration system) and then assesses how the new economic policies affect population movement, especially temporary movement, using the free markets as a case in point. The analysis is based largely on discussions and interviews with officials, policymakers, and scholars and on personal observations in various urban and rural locations during 1983 and 1984. It is augmented by data from the 1982 Census of China and by other published materials.

URBANIZATION LEVELS AND PATTERNS

Of the 1.002 billion people enumerated in China's third census in 1982, just over 206 million were living in its 236 cities and 2,664 other urban places (State Statistical Bureau 1983). With only one of every five persons living in urban places, China has a low level of urbanization. But because of the very large population involved, China has more people living in its urban places than constitute the national populations of all but three other countries in the world (India, the Soviet Union, and the United States). The Chinese situation is particularly intriguing because concurrently almost 800 million persons still live in rural areas and are engaged largely in agricultural activities. Therefore, as the Chinese recognize, their efforts to modernize the country must sooner or later involve the absorption of several hundred million more rural persons into nonagricultural activities and possibly into urban places.

As in other countries, considerable motivation exists among the rural population to move into cities. Differences in quality of life remain great between urban and rural places, despite efforts to reduce them. Higher incomes, better housing, sanitation facilities, educational opportunities, more varied entertainment, and greater availability of consumer goods all provide convincing stimuli for a shift from village to city. In China, at least until the mid-1980s, another factor has been the difference in ownership systems that characterize urban and rural places. In cities most job opportunities have existed in State-owned enterprises, whereas in rural areas collective ownership by communes has been the norm. The State has attempted to provide jobs to most able-bodied urban residents. Such employment has been particularly attractive because it has carried job security, stable and higher income, free or highly subsidized medical care, retirement pensions, housing subsidies, and other fringe benefits for the workers and their families. Such lifelong security–the iron rice bowl–has been a powerful attraction for peasants whose annual incomes have depended on the vagaries of weather and on decisions made by the collective leadership about income distribution; for them, old-age security, other than support from children, was far from institutionalized (Davis-Friedmann 1983:18–19).

Although some of these factors are changing through the economic liberalization in China associated with the establishment of the responsibility system and new policies governing urban enterprises (both of which allow greater freedom in organizing production and especially a high degree of self-management), the attraction of urban places for peasants is likely to remain strong. Because of the rapidity with which change is occurring in the nation and because of the vast size of the rural population, China faces in exacerbated form many of the serious problems associated with urban growth and rural development that confront other developing countries. Even a shift of 10% of the population from rural to urban areas would involve 80 million persons and lead to about a 40% increase in the urban population. On the other hand, the Chinese have already given considerable attention to the problems of population growth and population distribution, and over the course of several decades they have experimented with efforts to control urban growth–especially the growth of big cities–and to absorb surplus labor in rural areas and smaller urban places (see, e.g., Yeh and Xu 1984). There is of course another difference between China and most developing countries; the political situation in China is such that once a given policy is adopted, it can be implemented rapidly and thoroughly.

Urban structure

China's urban places at the time of the 1982 Census included 236 cities, defined as places containing at least 100,000 persons or, if having smaller populations, as the locus of the provincial leadership organs. In addition, in 1982, 2,664 towns were classified as urban because they contained 3,000 to 99,999 persons of whom at least 70% were engaged in nonagricultural activities or because they had populations of between 2,500 and 3,000 of whom at least 85% were nonagricultural (Li 1983).

Perhaps most striking about China's urban structure is the large number of cities with populations of one million or more. In 1982 the nation had thirty-eight such metropolises, comprising 16.1% of all cities in the nation (Table 1); by comparison, the United States in 1980 had only six such cities among a total of 170 cities with populations of 100,000 or more. Of the Chinese metropolises, three–Shanghai, Beijing, and Tianjin–dominated the urban hierarchy. Another 20% of China's cities contained 500,000 to one million residents. The greatest proportion of Chinese cities, however, was in the medium-size category: over one-third of the cities had between 200,000 and 500,000 residents. Small places constituted 28% of the nation's cities.

The distribution of cities by size class does not fully reveal how the urban population is concentrated. In 1982 China's city population was heavily concentrated in the metropolises (Goldstein 1985). Whereas cities of one million or more constituted only 16% of all cities, they accounted for just over 50% of all of China's population living in cities; and almost half of those people lived in cities of 2.5 million persons or more. In contrast, medium-sized cities, while accounting for just over one-half of the total number of cities in China, encompassed 42% of the population living in China's cities. An even greater discrepancy characterizes the smaller cities, which, although accounting for 28% of all cities, contained only 6% of the country's city population. The heavy concentration of China's city population in its big cities and the problems such locations have in providing adequate facilities for their residents help to explain why government policy invokes strict control on the further growth of big cities while encouraging the growth of small cities and towns.

Restricting the assessment of urban distribution to cities omits the population living in towns, which is part of the urban hierarchy. The 2,664 places classified as towns at the time of the 1982 Census

TABLE 1. Distribution of Chinese cities and city populations by size class, 1982

	Cities		City populations (in millions)	
Size class	Number	% distribution	Number	% distribution
5.0 million +	3	1.3	17.0	11.7
2.5–4.99 million	5	2.1	15.6	10.7
1.0–2.49 million	30	12.7	42.6	29.3
500,000–999,999	47	19.9	33.5	23.1
200,000–499,999	85	36.0	28.0	19.3
100,000–199,999	48	20.3	7.3	5.0
< 100,000	18	7.6	1.4	0.9
Total China	236	100.0	145.3	100.0

SOURCE: State Statistical Bureau (1983, table 11).

accounted for over 90% of all urban places in China and for almost 30% of the population living in urban places. Although the published census statistics do not include data on the size of towns, such information is provided in a report by Ding (1984), who has described the urban-rural distribution of China's population using 1982 Census results. The data show considerable variation in the size of places designated as towns. Of the 2,664 towns, 26 had more than 100,000 residents and an additional 231 contained 50,000 to 100,000 residents. Such places thus are similar in size to the 66 small cities with populations of fewer than 200,000. On the other hand, more than 90% of China's towns had fewer than 50,000 residents and 58% were reported as having fewer than 20,000. If China should succeed in its efforts to develop a significant number of new towns as centers of urban growth and to increase the populations living in existing towns so that those places were able to absorb a substantial proportion of the agricultural surplus labor, the predominance of those smaller places in the urban hierarchy, judged both by their numbers and by the percentage of the urban population living in them, should increase significantly in the years ahead.

Policies for urbanization

The strategy for China's urban development grows out of the Chinese policymakers' belief that the too rapid growth of big cities has given rise to many problems affecting housing, employment, and infrastructure. Such a view tends to minimize the failure of earlier government policies and programs to cope adequately with meeting consumer needs, controlling land use, providing energy and infrastructure, developing transportation facilities to supply cities, and increasing urban employment options. Regardless of cause, policymakers maintain that the number of big cities and the size of their populations need correction even while the needs of the nation's 800 million rural masses must be met. Urbanization, they therefore argue, must be harmonious with the development of industry and agriculture. This view requires, in turn, that city development be tied to agricultural production and that heavy industry serve light industry or agriculture. The need to develop all three sectors concurrently lies behind the basic urban policies of (1) strictly limiting the size of big cities (locations with 500,000 or more residents), (2) properly developing medium-sized cities (those with populations of 200,000 to 499,999), and (3) encouraging the growth of small cities (those with populations of fewer than 200,000) and county towns. The government is also encouraging the development of small market and commune centers, which are not classified as urban places, with the eventual goal of having these places form the nucleus of towns and small cities.

Big and medium-sized cities are seen as the locations of heavy and light industry; small cities and towns are viewed as potential locations for handicraft and workshop activities, with labor supplied largely from the rural surplus. Such places, it is argued, require less State investment while serving as catalysts for transforming rural into urban populations. What is perhaps most interesting about the emphasis on development of small places as the proper course of urbanization is the magnitude of the transformation that it would involve. Although planners recognize that any one town can absorb only a limited number of people, they point out that the large number of such places allows the aggregate effect to be great. For example, if each of the nation's 2,100 county seats increased its population to 50,000 persons, 39 million persons would be added to the more than 61 million current residents of those towns. And if each of the 54,000 commune seats increased to an average of only 5,000 persons, some 270 million would be resident in these centers (Ye 1982:11).

POLICIES REGULATING POPULATION MOBILITY

Paralleling China's urban policy and closely tied to it is its policy on migration.[1] The government position states that migration must fit the needs of the planned economy and any movement that is allowed, especially to urban places, must be compatible with economic development (Yeh and Xu 1984). Since urban growth is to be carefully controlled, migration to urban places must be carefully regulated. Specific principles developed to meet these goals are: (1) Rural-to-urban population movement must be strictly controlled. This principle applies especially to movement to China's three municipalities of Beijing, Shanghai, and Tianjin. (2) Movement from towns to cities, from small to big cities, and from rural places to suburbs must be properly limited. (3) Movement between places of similar size does not need control. (4) Movement from large to medium or from medium to small urban places, or from urban to rural places should be encouraged. Although these overall principles define permissible migration flows, actual regulation of population movement is more problematic and uneven than policy would dictate. Before turning to such an evaluation, however, we focus attention on the major mechanism used in China for regulating population mobility, the household registration system.

China's household registration system

The household registration system both defines and attempts to control permanent population movement. Each individual in China has an official place of residence, the record of which is maintained at the brigade level in rural areas and at the neighborhood level in urban places by the Public Security Bureau. To effect a permanent change in residence, one must be granted permission by the appropriate authorities in the place of origin or destination, or both. Movement within a given location is unrestricted.

The organization and operation of China's registration system is exemplified by that in Weifang, a medium-sized city in Shandong Province, which is characterized primarily by light industry, including textiles and carpet manufacture. As described by Weifang city officials, the governing philosophy is that the registration system should be systematic, convenient for the masses, and easy to manage. In urban places, every household has a household registration book. In rural areas, one person in the brigade or village holds the individual cards of all the brigade or village members. Single workers or cadres (administrators and officials at all levels) who live in factories and union facilities use a collective household register. The household register includes records of births, deaths, in- and out-migration, and changes in such characteristics as marital status, occupation, and education.

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[1] Unless specifically noted as being drawn from published sources, the information in this section is based on material gathered from personal communication with policymakers, city planners, other officials, and social science researchers.

Explicit policies have been established managing various segments of the register. A household register is created when a new household is established or moves into the community. Otherwise, individual names (of newborn infants or in-migrants) are added to existing household registers; deaths and out-migrants are deleted through use of special forms. The household register book contains a card for each individual. A copy of the individual card is also kept in the Public Security Bureau. If a person moves, he or she takes his or her form along, but the police keep theirs and note changes on it. If an individual has two households of residence, only the one most often used is designated as the official place for the household register.

Out-migrants must report to the police before leaving and obtain a permit to move; the move is then entered in the household register. For intraurban moves, the police at origin must be shown the permit obtained from the police at destination; a revision is then made in the registration at origin and the household register is shifted to the destination. A rural-to-urban mover must show at the police station of origin a permit from urban place of destination to obtain the household register card, which is taken along to formalize the move. New workers and students being assigned work can obtain their household registration forms upon showing their work unit (*danwei*) permits. Recruits to the army need only show evidence of enlistment. The enlistment is noted in the household record, but the record is not given to the individual since the army does not use the household registration system. If an individual is arrested, the unit making the arrest notifies the local security police, who enter the information in their register, and the individual household card is returned to the police station. Individuals who go abroad for study or work must also report to the police and return their register cards.

In-migrating individuals must report within ten days of arrival at their place of destination, show their permit, and request a new household register form. Demobilized soldiers and transferred army cadres must have their documentation from officials of at least the county level. Overseas Chinese and students returning from abroad may show their passports. Released criminals must show a permit of the court or of the public security unit. Homeless children need a permit from the Civil Affairs Unit.

In the medium-sized city of Weifang (Shandong Province), as in other communities throughout China, corrections were made in the household registers from August through October 1981, in preparation for the 1982 Census (Zhou 1984). Members of household register correction groups in every neighborhood and commune went to every household to insure that the detailed information in the household book corresponded to the household registration card. Government officials had estimated that, before the rectification of the household registers, 2–3% of the nation's residents lived elsewhere than the location in which they were registered; after rectification, only 1% were reported at different locations as indicated by the 1982 Census. Rectification included changing registration to the de facto place of residence if legally possible under existing policies, but de facto residence in itself was not adequate justification for a transfer of register. Thus, although persons away from their de jure residence for more than one year were enumerated in the census at the de facto place of residence, legal residence continued to be at place of registration. The Weifang official reporting this believed that local officials at both destination and origin had all the information they needed to insure correct registration and census enumeration because, as he put it, "Even if you live in a place illegally, the Neighborhood Committee will know."

The entire review process in Weifang, like that nationally, showed the registration system to be generally correct, but some problems did become evident. As a result of chaotic conditions during the Cultural Revolution, the registration system was not strictly enforced, so that errors in coverage and accuracy were introduced. Rapid population growth and especially urban growth also created problems. As a result of these situations, some individuals had no registration at all. In some instances, names of deceased persons continued to be included in the register. Most commonly, specific information on the registration cards, such as education completed or occupation, was not brought up to date.

A visit to a neighborhood in Weifang City provided an opportunity to examine the operation of the household register system at the local level. Here, the security police station (each neighborhood has one police station) is responsible for maintaining the neighborhood records. Individual households keep their own household registration books. A page is included for each person in the household. The back of the page includes space for noting date of in-migration or out-migration, as well as dates of moves within the city and the places involved in such moves. The first two pages of the books are for the household as a whole, and several pages in the back of each book are for temporary residents.

Obtaining urban registrations

Interviews with registry officials revealed that two basic principles are intended to govern the administration of the registration system: (1) the control of urban population growth in order to insure the orderly economic development of the nation by keeping population distribution in balance with labor needs and available resources, including grain adequacy; and (2) the allowance of some migration based on individual preference and humanitarian considerations, if the authorities consider the request reasonable. The two principles are not seen as incompatible. Authorities responsible for issuing household registrations ideally try to respond favorably to reasonable requests, taking human considerations into account as well as the legal prescriptions. Although the criteria employed may vary from one area to another, those established in Weifang are illustrative of how the register regulations are implemented and are similar to criteria reported in other cities:

1. Persons may obtain urban registration if they are nonagricultural workers or cadres assigned to work in the city. Workers may simply be transferees from factories in other cities. Such transfers may occur if a new factory needs workers with special skills or experience in operating certain machines. For example, when the petrochemical industry in Lanzhou was first developed, workers were transferred there from other petrochemical plants in the Shanghai area to form a nucleus of skilled labor for the new plant. Other workers may be newly recruited from the area in which a factory is being built or expanded. In such cases, preference is most likely given to middle

school graduates or young people already involved in State-run enterprises, such as State farms.

If their families already have urban registration—that is, if the transferees are moving from one urban place to another of similar size—the families may move at the same time. If the families of the transferees hold rural registration, they must remain in the place of origin, except in two circumstances. A child's household registration is the same as the mother's; therefore, if the mother is transferred to an urban place, her child's registration will also be transferred. If the family member remaining in the rural area is disabled or unable to participate in the rural economy and has no one in the village who can provide care, that individual may join the family member in the city upon receiving approval.

2. University graduates automatically receive urban household registration and are usually assigned by the State to work in urban places.

3. Persons who have worked in other cities and are retired and who have family members living in Weifang may join their families.

4. Workers and cadres who have been assigned jobs in mountain or border areas for a specified time or who have jobs that require considerable moving about may move to Weifang once their assignments are completed if they already have relatives living in the city. Such relatives may be grandparents or siblings as well as spouse, parents, or children.

5. Demobilized soldiers may return to Weifang if that is where they originally joined the army. Similarly, army cadres transferred to civilian work are eligible for urban registration in Weifang.

6. Criminals may return to Weifang upon completing their sentences if it is their city of origin.

7. Others, such as persons who have gone abroad to study and who have family members living in Weifang, may obtain registration in the city. Many special cases exist.

The regulations also determine which government office or bureau may grant permission to transfer the household registry. The permits are then checked by the Public Security Bureaus in the rural brigade or urban neighborhood of both origin and destination to determine if the official criteria sanctioning the moves are indeed being met.

Responsibility for issuing permits to transfer household registration rests with a large number of work units and government bureaus. For example, persons who wish to move from rural to urban areas, from other counties to Weifang City or from rural places to Weifang's suburbs must apply to the police station of the Public Security Bureau at the neighborhood level. (There is one station for about every 1,000 households.) The police investigate whether the conditions specified in the application meet the official criteria, then make a recommendation to the Public Security Bureau of the city, which decides whether a permit can be granted.

If a Weifang City resident wishes to move to a medium-sized or big city, a permit must be obtained from the destination area and presented to the Public Security Bureau of Weifang City. Such movers will not be given their household registrations for the move without a permit from the specified destination.

New workers or transferred workers moving to Weifang City from other places must bring with them a permit granted by the Labor Force Bureau concerned. A variety of ministries and bureaus can issue such permissions. Cadres must obtain their permits from the Personnel Affairs Department of the Department of Central Administration; students assigned work, from the Education Department; demobilized soldiers, from the Demobilized Soldier or Army Transfer Department. In all cases, the permits must be taken to the neighborhood police station for permanent registration in the city.

In all these situations some centralized control is exercised by the city Public Security Bureau, but only for checking the validity of credentials, not for restricting the number of migrants. As a result, despite an overall policy designed to control urban growth through control of migration, the manner in which the control is exercised does not insure coordination among the varying agencies authorized to issue permits, nor does it allow for easy achievement of any specific goal. Nor are the policies interpreted in exactly the same way in every location. In Lanzhou, for example, after 1978 priority for moving into the city was given to intellectuals, teachers, and skilled workers and their families, even if they were living in rural areas. Some local Chinese officials have argued that if China's goals for control of urban growth are to be met the nation must establish a centralized authority to coordinate state policies, to administer the specific procedures for issuance of permits, and to insure that the practice is consistent with development plans for employment, housing, education, health, and overall infrastructure.

Temporary household registration

The registration system works somewhat erratically for persons who are temporary migrants. If an individual plans to stay in an urban place for three days or more, whether for business, family visit, entertainment, or education, temporary registration is required. This may be done at hotels, with a work unit (if a person is on a short-term work assignment), or at the Industrial and Commercial Bureau office of free markets (for a peasant coming to the city to sell his or her products). A person may register directly with the neighborhood Public Security Bureau office or simply drop a temporary registration form into a box provided for the purpose in one of the neighborhoods. A temporary registration is valid for only three months and must be renewed thereafter through reapplication to the proper authorities.

Numerous officials have indicated that these requirements for temporary registration are not always rigorously enforced, nor is careful attention given to the length of time that an individual has remained at a destination, provided the individual does not become a burden on the community. (Some of the problems arising from lax enforcement are alluded to in a circular, issued in Wuhan, that required all temporary residents to report to the Public Security Bureau; see Solinger 1983.) A "temporary" stay may last a year or more. Moreover, no central reporting of temporary migrants is required such as is collected monthly for permanent moves. Data may be obtained from hotels, work units, and neighborhoods. But not all units are covered and data are seldom gathered regularly; furthermore, the statistics from the various sources are not routinely collated. As a result, statistics generally are not available on the total number of temporary migrants living in any given city during a specified period of time.

LEVELS AND FORMS OF POPULATION MOBILITY

Mobility as documented by the 1982 Census

In China an individual is officially considered a permanent migrant only if he or she has made a move involving a change in household registration. Persons living in cities who are not de jure residents of those cities are not counted as part of the city population in any enumeration based on household registers. Nonetheless, a considerable amount of "temporary" movement to urban places exists in China, and such movement is often officially sanctioned. Since de facto residents of cities may be numerous and different in their socioeconomic and demographic characteristics from de jure residents, their omission from urban registers and statistics distorts the data on the size and composition of urban places, as well as the data on the rural populations at places of origin.

In partial recognition of this situation, China's 1982 Census identified separately and counted as residents persons who had been living in a given locality for more than one year, even though they were registered elsewhere, as well as those residing in the locality for less than one year but absent from their place of registration for more than one year. In the census each household member was classified into one of five categories of residence: (1) residing and registered in the locality (individuals who had been away from their place of registration for less than one year were included here); (2) residing in a locality for more than one year but registered elsewhere; (3) residing in a locality for less than one year but absent continuously from the place of registration for more than one year; (4) living in a locality at the time of the census but not having a settled registration status (this category includes such persons as demobilized soldiers waiting for job assignments, students, and excriminals released from penal institutions, and it may include persons missed by the registration system entirely); and (5) originally having lived in a locality but abroad at the time of the census for work or study and therefore without registration. Because of these special resident categories, the 1982 Census results are not identical to the register enumerations, despite the heavy reliance on registration to insure complete coverage in the census.

Particular attention was given in the census to the problems inherent in identifying the permanent residence of mobile individuals. For example, persons in rural communes and production brigades who went to a city or another county temporarily for work or other activities and who came back frequently were not considered as being away for more than one year and were enumerated in their place of household registration. Persons involved in activities that required geographic mobility, such as prospecting, transportation and communication, mobile sales of handicrafts and sideline products, and construction, were also enumerated at their place of household registration to facilitate enumeration and to avoid duplication or omission.

Among the 1.002 billion persons enumerated by the census (excluding military personnel and the populations of Taiwan, Hong Kong, Macao, and Tibet), preliminary tabulations indicate that 98.9% (990.7 million) were living in their place of registration (State Statistical Bureau 1982:table 2). Of the remainder, 6.4 million persons were residing in places where they had lived for more than one year without permanent registration and 4.8 million reported residence with registration still to be settled. Only a small number (210,000) were reported as residing in the particular location at which they were enumerated but absent continuously from their legal place of registration for more than one year. Still fewer (57,000) were reported as living overseas.

These figures attest to a substantial number of mobile persons, even though they constitute only a small proportion (about 1%) of the total population. Many more persons were actually mobile, but since they had changed their registration to their new place of residence, they were not separately identified. In addition, persons who had been away from their place of registration for less than one year or had been away only intermittently were not identified as migrants.

Thus, neither the census nor the registers provide complete data on population mobility. Moreover, the regulations governing changes in household registration and severely limiting migration to urban places from rural areas may result in distorted data on actual residence.

The situation in a commune outside Chengdu exemplifies the problem. One brigade reported a population of 1,769 women and 1,335 men. When asked about this imbalance, officials indicated it was due to patterns of mate selection and their effect on registry data. Many young women from the brigade marry city workers who keep their city registers; the brides must retain their rural registration, even though they may live for much of the year in the city. Since children are registered with their mothers, the overall system leads to a disproportional number of women and children registered in the brigade. The situation is so common that the villagers have a special designation for women whose husbands work in the city; they and their children are known as "workers' and cadres' families."

In other communes a similar sex imbalance may be due to selective hiring practices by urban employers. City work units may recruit from rural areas but are likely to hire only men. In this way the government can avoid bringing families into the cities, since children's registration is tied to that of their mothers.

Permanent movement as a component of city growth

The two situations just described indicate the kinds of accommodations in permanent residence that the Chinese must make under the existing household registration system and in conformity with China's policy of controlled urban growth. Temporary movement has become a major form of mobility. Yet permanent movement, despite the restrictions imposed, continues to account for an important segment of city growth, although its level may vary by city size. The experiences of a big city (Chengdu, the capital of Sichuan Province) and a medium-sized city (Weifang in Shandong Province) illustrate the point.

Greater Chengdu

In 1982 Greater Chengdu, with its population of 4,015,529, had a natural increase of only 9.9 persons per 1,000 or 39,874, reflecting 64,665 births (16.1 per 1,000) and 24,791 deaths (6.2 per 1,000). (See Table 2.) During that year 69,147 persons moved into the city and 52,159 moved out, including university students (Table 2). The in- and out-migrants were therefore more numerous than the births and deaths; on balance, however, migration contributed only 16,988 persons to the city's growth (4.2 per 1,000 population). Natural increase was therefore more than twice as important as net migration as a factor in Greater Chengdu's growth.

The data on the components of population change in Greater Chengdu during 1982 allow separate assessment of the comparative rates of natural increase and of migration for each of the subdivisions of the city, which includes the older core or inner city, the suburban districts, and the largely rural counties that have been placed under the city's jurisdiction. Unfortunately, the data on births, deaths, and migration are not available by age, and so the comparisons are necessarily crude. Nonetheless, they suggest interesting differentials in the ~~relative~~ importance of natural increase and migration in the growth of the respective segments of Greater Chengdu, and through use of information made available on the volume of interprovincial migration, they also suggest the comparative importance of short- versus long-

TABLE 2. Components of natural increase in Chengdu, the inner city, suburban districts, and counties, 1982

Area	Total population	Births	Crude birth rate	Deaths	Crude death rate	Natural increase	Crude rate of natural increase[a]
Total city[b]	4,015,529	64,665	16.1	24,791	6.2	39,874	9.9
Inner city	1,239,214	18,972	15.3	6,961	5.6	12,011	9.7
Suburban districts	1,233,301	22,266	18.1	7,614	6.2	14,652	11.9
Counties	1,543,014	23,427	15.2	10,216	6.6	13,211	8.6

a. Per 1,000 population.

b. Including inner city, suburban districts, and counties under city jurisdiction.

distance movement as a factor in migration's contribution to urban growth.

The suburban districts had a slightly higher crude birth rate than the inner city and the counties (Table 2), possibly reflecting differences in age composition. The birth rates of the inner city and the counties were virtually identical, at about 15 per 1,000 persons. Most noteworthy perhaps is the similarity of the rates among the three areas. Even less variation characterized the death rates, which ranged only between 5.6 and 6.6 per 1,000. As a result, the rates of natural increase of the three residential categories largely reflected the differences in birth rates, with that of the suburbs being highest, 11.9 per 1,000, in contrast to the 9.7 and 8.6 of the inner city and counties, respectively. Again, despite the variation, natural increase in 1982 amounted to only about 1% of the population and was even less in the counties.

Greater variation was displayed by migration (Table 3). Whereas net migration for the city as a whole was only 4.2 per 1,000, equivalent to less than half the rate of natural increase, its magnitude varied from a high of 11.1 per 1,000 for the inner city to 2.5 for the suburbs and only 0.1 for the counties. As a result, migration contributed about 15% more than natural increase to the inner city's growth. By contrast, in the suburbs its contribution to growth was only one-fifth that of natural increase, and in the counties the net migration of 147 persons equaled only 1% of the natural increase. These data on net migration clearly document the extensive differentials in the importance of

TABLE 3. Migration in Chengdu, the inner city, suburban districts, and counties, 1982

	In-migrants			Out-migrants			Net migration			Net migration rate[a]	Net migration per 100 natural increase
		From another province			To another province			Interprovincial			
Area	Total	Number	%	Total	Number	%	Total	Number	%		
Total city[b]	69,147	14,972	21.7	52,159	10,839	20.8	16,988	4,133	24.3	4.2	42.6
Inner city	34,989	11,059	31.6	21,187	6,873	32.4	13,802	4,186	30.3	11.1	114.9
Suburban districts	13,544	2,750	20.3	10,505	2,310	22.0	3,039	440	14.5	2.5	20.7
Counties	20,614	1,163	5.6	20,467	1,656	8.1	147	-493	**	0.1	1.1

** Cannot be calculated.

a. Per 1,000 population.

b. Including inner city, suburban districts, and counties under city jurisdiction.

migration to population growth in the various residential segments of Greater Chengdu. Its absolute volume and importance is by far greater than that of natural increase in the inner city and practically nil in the counties.

Of course, net migration masks the opposing streams of in- and out-migration, which in Greater Chengdu far exceeded the net changes for all three residential categories. Data on the reasons for movement were not available; but if the insights gained from other locations are typical, the same basic reasons–economics and education–that accounted for some persons' in-migration also explained the out-migration of others. The net gain of some 13,800 migrants in the inner city resulted from an in-migration of almost 35,000 persons and an out-migration of 21,200. Even in the rural counties of the city, the very small net gain of 147 migrants involved a gross movement of some 41,000 persons, almost equally divided between in- and out-movers. Thus, all parts of the city experienced considerable turnover, despite the relatively small net changes of about 17,000 for the city as a whole. The involvement of some 124,000 in- and out-migrants and the possibility that they differed from each other in educational, occupational, and demographic characteristics, lend weight to the conclusion that migration must be regarded as a key variable in accounting for change on the urban scene despite the controls exercised over it.

Further evidence of the differential impact of migration on the various segments of the city is provided by data on the origin and destination of migrants. For the city as a whole approximately one out of every five in- and out-migrants moved from or to another province. This proportion varied, however, from almost one-third of the inner city migrants to one-fifth of the migrants to and from suburban districts, to less than 10% of the county in- and out-migrants. Not only did the inner city gain many more migrants on balance than did the other two segments of Chengdu, but also more of these migrants were from other provinces. Together with the large group of intraprovincial migrants, these migrants to inner cities outweighed natural increase in accounting for total growth. These data suggest that, especially for the inner city, migration constitutes a particularly important factor in demographic and socioeconomic change.

Weifang

A somewhat different picture of the importance of migration to urban growth emerges for the medium-sized city of Weifang. There the available data cover a five-year period and not just 1982. Weifang's Public Security Bureau reported that since 1979, when the government adopted a stricter policy of controlling city growth (Yeh and Xu 1984), it has been very rigid in limiting in-migration. Yet, migration accounted for an important segment of the city's population growth. At the end of 1977, the city had a population of 248,769. By the end of 1982, the population had increased to 377,952, of whom 366,207 had permanent household registration. Of this five-year increase of 129,183 persons, over half (68,313) is attributable to a boundary change resulting from annexation. The balance of the increase (60,870) can be divided between 11,745 temporary residents[2] and an addition of 49,125 persons to the household registration roster.

This increase of almost 50,000 permanent residents in turn can be subdivided into 17,486 persons added through natural increase (representing 25,525 births and 8,039 deaths) and 31,639 persons added through net in-migration. Thus, despite the careful controls on migration, population movement played a key role in the city's growth during the five-year interval, accounting for almost two-thirds of the total growth—and even more if the almost 12,000 temporary migrants are included.

Information from the Public Security Bureau of Weifang indicates the reasons for migration (Table 4). The data show that economic factors play a primary role: 10,795 individuals were given registration in Weifang in order to meet the need for more workers in factories, and another 24,143 were students assigned work in the city upon graduation and cadres transferred from other places (including family members if migration was from another city). In addition, some 3,577 workers and their families moved to the city because an entire factory shifted location. After economic factors, the next most important reason for register change was the enrollment of students in colleges and secondary schools. Slightly more than 11,000 young people obtained household registration for this reason.

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[2] The number of temporary residents is undoubtedly a minimum figure, since temporary registrations are not systematically collected, nor do all temporary migrants apply for temporary residence registration.

TABLE 4. Reasons for migration: Weifang City, 1977–82

Reasons	Number of persons	% distribution
Migration to Weifang		
Workers taking new jobs	10,795	17.5
Cadres assigned to new posts[a]	24,143	39.2
Factories moved	3,577	5.8
School enrollment	11,013	17.9
Policy rectification	567	0.9
Family reunion	3,478	5.7
Demobilized soldiers	2,914	4.7
Marriage[b]	3,211	5.2
Retirement	735	1.2
Others	1,157	1.9
Total in-migrants	61,590	100.0
Migration from Weifang		
Cadres and workers reassigned[a]	13,825	46.2
Students assigned to jobs or enrolling elsewhere	6,901	23.1
Enlistment in army	1,943	6.5
Rustification of youth (1978)	1,599	5.3
Family reunion	186	0.6
Marriage	1,297	4.3
Retirement	2,942	9.8
Others	1,258	4.2
Total out-migrants	29,951	100.0

a. May include family members.

b. Only if spouse was from another city. Spouses with rural registration may not obtain urban registration upon marriage.

Personal considerations do enter into the issuance of urban registration. Between 1978 and 1982, for example, 3,478 persons were allowed to move to Weifang City to rejoin their families. Of these, the vast majority were disabled persons who could no longer do agricultural work; most were elderly parents joining their adult children. A small number were parents who had been working in mountain or border areas and who rejoined their young children in the city. Marriage also accounted for about 3,000 in-migrants, since spouses were allowed to join newly wed residents in the city if the spouses came from another urban place. The return of almost 3,000 demobilized soldiers added to the number of in-migrants, as did a small number of persons allowed to move back to Weifang to "correct" relocations during the Cultural Revolution. Finally, some retired workers and cadres shifted into Weifang from other places. Clearly, then, while economic and educational factors account for the large majority of household registrations granted in the city, noneconomic considerations also affect the decisions.

Although 61,590 migrants were given permanent registration in Weifang City during the period between 1977 and 1982, the migration stream was by no means unidirectional. Almost 30,000 persons transferred their registration elsewhere. The reasons for out-migration closely paralleled those for in-migration. Almost half (13,825) of the out-migrants were cadres, workers, and their families who moved elsewhere (presumably because of job transfers); and another 6,900 were students who were assigned work elsewhere after graduating from college or secondary school, as well as young people from Weifang City who enrolled for studies in other locations. As was true for in-migration, therefore, economic and educational reasons together accounted for the largest proportion, by far, of the out-migrants. Yet, other reasons also motivated out-migration. Almost 2,000 individuals joined the army; almost 3,000 were retired workers and cadres going elsewhere (usually to their home town) to spend their retirement years; some 1,600 had been transferred from the city in 1978 as part of the shift to the countryside (a process that stopped in 1979); and another 1,500 moved for personal reasons, such as marriage or family reunion due to illness or old age.

Because Weifang is a developing medium-sized city, the number of in-migrants during this period considerably exceeded that of out-migrants. But these data demonstrate that in China, as elsewhere, every migration stream has its counterstream and that there is a considerable turnover of population because of the combined operation of the in- and out-migration process. That the numbers involved are not greater can be attributed to China's urban growth policy as it works through the registration system.

Temporary mobility

As has been indicated, migration as defined by a change in household registration encompasses only a portion of the population mobility characterizing China. Casual or "spontaneous" movement, involving sojourns of from a few days to several years, has been a feature of Chinese life to varying degrees since 1949 and even before (see, for example, Skinner 1976; Koshizawa 1978). It was severely curtailed with the institution of the commune system in 1958 (Griffin 1984), when few opportunities were available for rural labor mobility. Chinese planners and researchers agree, however, that despite a paucity of data, such mobility has been increasing as a result of the new agricultural policy–the responsibility system–introduced in 1979.

Instituted both in an effort to boost agricultural production and as a way of increasing peasant income (Lu 1983), the responsibility system is based on contracts involving three parties–the State, the collective, and the peasant household. At the highest level the State works out the rural production plan, assigning the types and volume of crops to be produced to various regions and allocating quotas to the collectives. Each collective, in turn, through its production brigades contracts out tracts of land to peasant households, who agree to grow given quantities of the specified crops. At the lowest level, the peasant household is required to deliver its quota to the collective, and through it, to the State. The collective retains a share of earnings from the sale of the crops for its own use. The balance of agricultural production is owned by the peasant households and is subject to an agricultural tax at the household level.

The agricultural responsibility system is implemented in a variety of ways. Overall, however, for the peasant household it allows flexibility in organizing productivity and especially a high degree of self-management. Work assignments are no longer randomly determined by arbitrary orders. Within the limits imposed by the agreement with the collective, the peasant has the right to use the land to maximum advantage, or, if he decides to pursue nonagricultural activities, to transfer the land back to the collective or to another family. At all times, the land is owned collectively, and cannot be sold to individuals or families. Large farm machines and irrigation systems also continue to be collectively owned. Public ownership of the basic means of production–land, machines, and water–is seen as insuring maintenance of the socialist system of agriculture.

Because that policy places a premium on both individual initiative and more efficient production, a large number of peasants is no longer needed in the agricultural production of basic crops, such as grains, cotton, and oil-bearing plants. The resulting surplus labor force is partially absorbed into newly emerging rural industrial and service enterprises, the development of which the State is strongly encouraging. These nonagricultural activities are located in the villages, in county and market towns, or in commune seats; and many are a current manifestation of traditional activities (Fei 1936:18–20, reprinted in 1983). Chinese policymakers therefore see these small places as playing a key role in overall rural development (Fei 1984). They increasingly view them as potentially absorbing the vast and growing surplus rural labor pool and as alternative centers for industry and commerce. These incipient urban centers are expected to relieve the pressure on larger cities by providing urban amenities and job opportunities to ever larger numbers of rural residents who might otherwise seek them by migrating to cities. Such rural inhabitants are expected to continue to live in rural areas and sometimes even to function partly as peasants while commuting to small towns and cities to work in private, collective, or State-owned industry and commerce. (For a fuller discussion of the impact of the responsibility system on labor absorption, see Goldstein and Goldstein 1984.)

Local industry and workshops operated by communes and brigades and small private enterprises are seen as providing the operative mechanism in small town development. In some areas the government gives direct help to peasants to enable them to make the transition from agricultural to nonagricultural activities. Such help includes financial assistance, provision of raw materials, and technical training. Peasants may obtain permits to become specialists in such service activities as tailoring, carpentry, and blacksmithing, and to hire apprentices. Others may be given permission to open shops or operate small factories, or to purchase tractors, carts, or boats for transportation. Technically qualified peasants may be allowed to operate nurseries, bookshops, or clinics and are offered technical guidance to enhance the quality of their activities.

The policy emphasis on the potential value of stronger linkages between rural and small urban places as well as on the broader urban networks into which such places fit is evidenced in Document No. 1, *Circular of the Communist Party of China Central Committee*, issued early in 1984 (*People's Daily*, 20 January 1984) on the topic of rural work. It called for various measures to improve the infrastructure for commodity circulation, including better provision of storage facilities, warehouses, transportation, and communication; it also recognized that big and medium-sized cities play a key role in rural development by providing free markets for peasants, by offering sites for wholesale markets for farm produce and sideline products, and by becoming sites where trade centers might be created.

Perhaps the strongest evidence both of the emphasis placed on development of small towns as alternatives to further growth in large cities and of their role in rural development is the circular's provision that, on an experimental basis, peasants will be allowed to settle in towns to engage in industry, business, and service trade, provided they make their own arrangements to obtain grain (presumably mainly from the communes where they have been members) and do not become dependent on State supplies. The policy implies that peasants will be allowed to build homes in the towns, although they will not have permanent urban registration there. It also implies that urban residence might be terminated if conditions should change, causing continued peasant residence to burden a town's ability to provide jobs, housing, or grain supplies. Anticipating such developments, the document urges towns to plan for short-term and long-term construction and to use land sparingly in doing so. The recent developments in rural areas and the substantial exodus by peasants out of agriculture into industrial, commercial, and service work have given impetus to the government's emphasis on the town as a place of residence and as a link in the rural-urban network (*China Daily*, 26 September 1984, 6 November 1984). That the new policies set forth in Document No. 1 are being rapidly implemented is evidenced in statistics on the number of towns in China, released a scant eight months later. According to a report in the *People's Daily* (9 September 1984), the number of towns in China had doubled to 5,698 by June of 1984 and was predicted to almost double again by the end of 1984 to about 10,000.

By creating a surplus of agricultural labor and simultaneously providing nonagricultural activities in small urban places and market towns, these new developments in rural areas are fostering an increasing level of migration. Nonetheless, the constraints on permanent change of residence inherent in the way the household registration system operates and the still limited number of economic opportunities relative to the large surplus labor force mean that mechanisms other than permanent relocation must be sought by peasants seeking to improve their level of living, or simply even to find jobs. A considerable portion turn to activities involving sojourns in cities.

One such activity, which predates introduction of the agricultural responsibility system but may have grown because of China's overall modernization policies, is construction work. To meet the pressing demands of new construction following the lull in building created by the Cultural Revolution, peasants were recruited in rural areas to work temporarily in cities as construction workers. Such arrangements generally have been made through the initiation of contracts between work units engaged in construction and one or more communes. The commune provides a specific number of construction laborers, usually young men. They may move from city to city, as old contracts are completed and new ones initiated. In some instances work assignments in a particular city may continue over several years, as, for example, in construction activities at major universities. The number of such construction workers in China is considerable. In Guangzhou alone, it was estimated that as many as 30 to 40 thousand individuals were living in the city under such contract arrangements.

Even more may be doing so in such places as Shenzhen, Foshan, and other urban locations that are undergoing expansion. Xiao Tong, vice minister of Urban and Rural Construction and Environmental Protection, indicated that reliance upon peasants as construction workers in cities was likely to increase (*China Daily,* 10 March 1983). He reported that construction of new buildings in satellite towns and in industrial and mining areas would be undertaken mostly by rural collective teams on a contract basis.

Another way in which the individual responsibility system fosters migration involves the commune or the brigade per se. A growing number of communes and brigades are operating shops in the city for agricultural or industrial products produced by the commune. In such instances, the commune evidently receives permission from the city to operate the enterprise and is expected to pay tax to the city. Members of the commune or brigade are assigned to live and work in the city for a specified period. There is often a regular turnover in personnel who continue to be considered rural residents even while living in the city, both because of the locus of their household register and because they receive their grain ration through the commune.[3] Usually such migrants are not accompanied by family members. In Handan, an industrial and mining center in Hebei Province, for example, more than 10,000 peasants living in the communes surrounding the city now work in hotels, cinemas, restaurants, and other enterprises sponsored by their communes and brigades (*China Daily*, 2 March 1983).

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[3] In rural areas communes are responsible for providing their members with a

Still another form of mobility exists that represents probably the most radical adjustment of the system to changing conditions in rural areas. Despite the absorption of large proportions of the surplus rural labor in nonagricultural activities in rural areas, in commune-operated shops in the cities, or through commune contracts with work units for temporary workers, many peasants are evidently without work. On their own, they have decided to engage in service or sales work in other rural or urban places. Some are domestics or providers of child care; some sell their services as carpenters or mattress makers, for example; still others may become itinerant merchants. While away from their official village of residence, they live with relatives, friends, employers, and sometimes even in small hotels. Most of them seem to engage in activities that allow them to obtain housing, jobs, or grain and oil rations without having to obtain a household register in their new location. A domestic, for example, can live with her employer and draw upon her employer's grain and oil rations while holding a job clearly not assigned by the government. A carpenter can do the same, taking advantage of the housing and food provided as part of the return for his services as he moves about from one assignment to another.

Such temporary service workers may constitute a considerable number of workers in any given city. Estimates for Beijing, for example, indicate that as many as 30,000 domestic workers are privately employed in the city. In Handan, as many as 10,000 peasants are estimated to be operating service enterprises such as small stands and shoe repair stands (*China Daily*, 2 March 1983). Most of those people undoubtedly are classified as temporary migrants, although their employment may last for several years. Rural laborers are also pouring into Tianjin. An estimated 100,000 are in the city as construction workers

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grain ration; for urban residents, grain is supplied by the State through specified outlets. When a commune-based individual takes up temporary residence in a city, grain must still be obtained from the commune of origin. Only an official change of registration can change the source of grain supply. With the loosening of restrictions on grain sales through private channels, these controls are breaking down to some extent.

and vendors. Additional thousands enter as itinerant workers providing a variety of services, from puffing rice to processing cotton for quilts. About 3,000 young rural men are estimated to be doing carpentry in the municipality. Their services are institutionalized enough so that a carpentry market and labor exchange has been formed in one of the city's squares. Similarly, young women from Anhui Province, who commonly provide household help, have set up an informal labor exchange. Officials see such temporary migrants as a positive force in their nation's development because they provide needed services in urban areas and because they create opportunities for the surplus rural labor force; the successful service workers are also considered as providing a model for unemployed urban youths who in the past have looked down on service work (*China Daily*, 6 December 1984).

Perhaps the most visible form of temporary movement fostered by the individual responsibility system is the mobility engendered by the resurgence of free markets. Our attention therefore turns next to an in-depth examination of this newly vigorous form of traditional economic activity.

THE FREE MARKETS: A CASE STUDY OF TEMPORARY MOBILITY

Like so many other aspects of Chinese life and policy, free markets take on varied forms depending largely on their location and function. Similarly, the kinds of mobility associated with the markets also vary. Detailed examination of free markets can therefore serve as a useful case study of how mobility and development are interrelated and how differing forms of mobility may help individuals adjust to the changing situation in China. The following discussion focuses on those free markets that are directly related to the agricultural responsibility system as it applies to rural areas, and on those kinds of free markets that provide linkages between rural and urban areas; other types of markets, such as clothing markets in cities, are not discussed.

Rural markets were long a traditional feature of the Chinese countryside. They declined as rural production was channeled almost entirely into grain and other staple crops, and they were particularly discouraged and sometimes forbidden during the decade of the Cultural Revolution. Rural markets began to revive in 1979, a little before implementation of the responsibility system. As the new agricultural economic policy began to encourage use of private plots and then allowed peasants to keep any crops grown on communal land above their contracted quotas, rural markets again flourished.

The scope of free markets

In Shandong Province, for example, rural markets traditionally had enabled the exchange of agricultural products. In 1955 the province's 4,500 free rural markets generated 770 million yuan in sales.[4] Once communes were established and new production priorities were promulgated, the number of markets dropped. By 1976 only about 3,000 small rural markets remained in the province. Then, with the institution of the responsibility system and encouragement of a "market bowl economy," the number of free markets in Shandong grew rapidly. By 1982 there were over 4,000, most located on main highways, at transport junctions, or in county towns; 150 were located in cities. This rapid growth indicates the importance markets are assuming for the rural economy; almost 20% of all agricultural products sold in the province in 1982 were sold in free markets. And estimates suggest that for the small cities and towns of Shandong, as much as 80% of the produce, meat, and eggs needed by the residents is provided by the free markets.

Free markets also generate a substantial portion of food sales in cities. Authorities in Jinan (Shandong Province) estimate that the 22 yuan per capita spent each year in free markets in that city constitute one-eighth of total expenditures for food. That the proportion is not higher is due in large part to the extensive development of State outlets for agricultural produce, especially grain. Officials also recognize that the number of free markets in a given city may be insufficient to meet demand. The eighteen markets operating in the inner city of Jinan in 1983 were not considered adequate; plans were being made for eventual expansion to thirty markets, so that each large residential area could have its own market. City officials believed that such an arrangement would not only be more convenient for their population, but would also relieve much of the traffic congestion now created by the existing markets. Free markets are considered so integral a part of city life that they are now being incorporated into general city planning, and their location and particular specialties may be the result of careful "social investigation."

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[4] One yuan equals approximately US$0.40.

Free markets generally offer a wide variety of products, ranging from staple grains to seasonal vegetables and fruits, meats, poultry, and eggs; from exotic house plants to caged birds; from small handicraft items to furniture. In Shanghai, one free market specializes in hard-to-find produce and seafood, as well as dried vegetables, especially mushrooms. Several of Beijing's markets are also specialized; one in the western district of the city is known for its plants, birds, and tropical fish. A large section of the riverbank in the city of Weifang is given over to sellers of dried legumes and grains, especially millet. Even in rural areas, specialized markets may develop on a small scale. At a small-town railroad junction in Sichuan Province, for example, twelve to fifteen peasants gather daily to sell fresh ginger. Even in such an isolated spot, where days may pass without a single sale, they can earn up to 1,000 yuan over the course of a year.

More typically, however, items on sale at free markets encompass a full range of foods and often include household items, flowers, and small handicrafts. A large market in Chengdu, for example, to which 700 to 800 vendors come daily, sells many vegetables and seasonal fruits, some dried grains, eggs, meats—including fresh and smoked rabbit—fish and eels, and flowers. The market covers several city blocks and is constantly busy during its thirteen-hour day (from 6 a.m. to 7 p.m.), especially during the two hours before noon and again in late afternoon. Similarly, in one of the free markets in the northern Haidian district of Beijing, between 150 and 160 kinds of food are sold (Liu 1982) in the 800 to 900 stalls that are open daily. The market has expanded continuously since it began operations in March 1979 and now serves approximately 20,000 people daily. Although most customers of free markets buy on a retail basis, some wholesale trade also takes place, especially to restaurants and some cooperative shops.

City markets operate seven days a week, although some days, especially Saturday and Sunday, are busier than others. In rural areas, where markets are held in the county towns, smaller market centers, and sometimes in the commune centers themselves, markets are held only on specified days. These may be designated days of the week or calendar dates such as those ending in 5 or 0—that is, every fifth, tenth, etc., day of the month. Such an arrangement allows peasants to sell their wares in several locations and thereby considerably expands their marketing potential. It also broadens the area within which they circulate.

Characteristics of vendors

Peasants who are vendors in free markets typically arrive on foot or by bicycle, in part because few peasants have access to motorized transport, in part because urban free markets (and many small-town markets as well) prohibit lorries, carts, or tractors from within their vicinity. The limits on available transportation restrict the distance from which peasants will come to sell their foods. In rural areas, peasants are likely to have access to markets within a relatively short radius; in cities, the vendors are most apt to come from the nearby suburbs. A survey in a Beijing market indicated that produce vendors bicycle in from an average distance of 40 kilometers, and that 80–90% of the produce is transported by bicycle. Nonetheless, some peasants come from a considerable distance, and even those traveling by bicycle may cover 200 kilometers (a 24-hour trip). The same Beijing market attracts vendors from at least fifteen provinces; they come to sell items rare in Beijing, such as prawns from the coast, spring vegetables from Sichuan, oranges from Guangdong, or apples from Shandong. Bird vendors come from as far away as the mountains of Inner Mongolia or the western sections of Sichuan, but since they earn very high profits, most agree that the long trips are worthwhile. Such long-distance vendors are likely to become more numerous in the future because the government has relaxed its regulations governing such interprovincial marketing. The change was already apparent in the summer of 1984, when trains were crowded with peddlers moving from Sichuan to Beijing, from Jiangsu to Inner Mongolia, from Xian to Tianjin.

The vast majority of sellers in the free markets come from nearby communes and do not remain at the market site overnight. They are most likely to sell produce and meat, and may not come to market daily but only once or twice a week. Turnover among vendors in any given market is thus quite large. Only 20–50% of produce vendors may be "regulars."

Although both men and women come to free markets to sell goods, some division of labor seems to exist between the sexes. Chengdu market managers indicated that fruit and flower vendors tend to be men, whereas vegetable vendors are more likely to be women. Our own observations suggest further that men usually sell meats and fish, as well as birds, tropical fish, and plants, but eggs are often vended by women. Women are also much more likely to come from areas near the market site and to return home at the end of the day; longer trips and longer sojourns are more typically undertaken by men. Finally, the size and weight of the load to be transported to market may determine whether a man or woman undertakes the trip.

Peasants have several sources for obtaining the goods they sell, but all sources are fostered by the responsibility system. Some produce, poultry, and livestock is raised on the peasants' private plots; some is surplus produced in excess of the quota stipulated by the household's agricultural production contract. If a household has accumulated enough products in this way, one or several members may take it to market. In many instances, individual households may not have enough goods to warrant a trip to market, or they may not wish to undertake the journey. Such households may give their products to a second party, who will gather the production of several households and take it to market for them. The responsibility system is thereby helping to create individual entrepreneurs in rural areas to expedite the marketing of agricultural production. In Jinan, for example, 45% of the sellers were individuals selling produce they had grown, 50% were peasants selling agricultural products grown by others, and 5% sold under commune or brigade auspices.

The free markets also attract persons selling services or handicrafts, many of whom travel considerable distances. A Beijing market, for example, may have a whole section populated by tailors from Shanghai and its nearby province of Jiangsu. There is a shortage of tailors in Beijing, and because Shanghai tailors have a reputation for good styling and workmanship, they do a brisk trade. Many stay for as long as a year or more. Similarly, locksmiths and shoemakers from Jiangsu Province are a common sight in Shangdong Province or in Inner Mongolia, and they too may stay for many months. Other skilled workers, such as embroidery sellers from Zhejiang in the south, may come to far-distant markets and stay for two to three months.

For such long-term circulators, market managements may even provide overnight accommodations or arrange for them to stay in inexpensive hotels outside the center city. In a large Shanghai market, for example, dormitory-type housing is available, or peasants may rent blankets and sleep in a nearby shelter. During the peak season, and especially in the weeks before the annual Spring Festival, market managements may arrange for extra overnight accommodations for the many peasants who travel considerable distances to provide the urban population with special seasonal delicacies and flowers. The city of Guangzhou provided eight hotels in 1983 just to house peasants coming to the city to sell flowers for the Spring Festival. Since hotels charge for room space, many peasants who cannot return home at the end of the day arrange to stay with friends or relatives in the city, or even sleep in the market stalls if the weather permits.

The free markets thus contain a heterogeneous population of vendors composed in large part of peasants from nearby communes, circulators from more distant places, and persons selling their services or goods at the market for several weeks or even months. There is apparently enough flexibility in the market management to allow such variety and also to provide the services necessary to enhance the well-being of the vendors. A Chengdu market even provides hot water and medical services to its grain and legume sellers since they often stay in the city for two to three weeks at a time.

Markets and mobility

Free markets have become an integral and vital part of the city and town life and are serving a multiplicity of functions. For example, they are helping to raise rural incomes, although just how much a share of the aggregate increased earnings they contribute is difficult to determine. Communes and brigades keep careful records of peasant earnings from agricultural and nonagricultural activities conducted under the contract system or carried on in commune-run enterprises. They apparently do not usually ask peasants to report their incomes from private plots or private handicraft products. Yet there is little doubt that income earned from such unofficial sources contributes toward peasants' ability to build new houses and to buy the transistors, clocks, TVs, and electric fans that are becoming more common in peasant homes. It is also possible that such earnings have played a role in leading some peasants to believe that they are able to afford a second child despite the fine having one would incur.

The markets also help to raise peasant incomes in another way. Since the responsibility system allows the contracting group to make its own decisions about labor allocation, manpower (and womanpower) is used more efficiently than in the past. Fewer persons are needed to grow the basic grains and produce, thereby freeing others to engage in sideline and nonagricultural work. A household may decide to free one of its members from cultivating the collective lands to devote time to private plot cultivation and to marketing goods. The free markets thus offer nonfarm job opportunities and thereby help to absorb surplus rural workers, many of whom were underemployed before institution of the responsibility system. The net result of such full use of all available labor can be a considerable rise in average per capita income. Officials of Shandong Province estimate that as much as 20% of the surplus labor associated with the responsibility system is absorbed by free market activity.

While helping to raise the rural standard of living, free markets also meet new demands of urbanites. As urban standards of living have risen, consumer demand has developed for greater variety in foods, for better meat and produce, and for more and better services. Although prices for vegetables, fruit, poultry, and meat are generally slightly lower in State shops, the produce available in them is usually limited to whatever happens to be in peak season, and its quality is likely to be poor. By contrast, produce in free markets is likely to be carefully picked and arranged, fresh and crisp, and available in considerable variety since peasants know they can easily sell items that are not in plentiful supply locally. Urban residents are also pleased with the prompt and polite attention they receive from the vendors, which is often a sharp contrast to the attitudes they meet in the crowded State shops.

Not only do markets provide the quality and variety of foods desired by rising urban consumer demand, they also meet some of the needs of a changing population. With the increase in the number of retired persons and the concomitant decrease in the number of infants, many older people find themselves with free time that they might have previously devoted to childcare. They are turning to the pursuit of hobbies, among other activities. Raising fish and birds is particularly popular. Many markets have sections devoted to these interests, offering not only the fish and birds for sale, but also cages and other accessories. One large market in Beijing, while also selling foodstuffs, specializes in catering to these hobbies and draws customers from the entire municipality. The market decided on its particular focus after careful consideration of residents' needs. Even in some of the smaller provincial cities, like Datong, fish and bird stalls represent an important segment of free markets.

Markets can thereby serve as centralized meeting places for various segments of the population, and in many places, urban as well as rural, they provide an important social function. Especially in the smaller cities and county towns, where cultural activities are limited and sporadic, they can help fill the need for social activities and even become a source of entertainment. They become places where friends can meet, where gossip is exchanged, where one may see exotic or unusual goods. Free markets generally do not allow the sale of freshly cooked foods because of the difficulties of maintaining standards of hygiene. Nonetheless, specialty items may be available, such as freshly baked sweet potatoes in Beijing and Jinan, skewered charcoal-roasted bits of lamb in heavily Moslem Lanzhou, and freshly baked flat breads in Chengdu. Many markets are located in streets lined with small noodle and coffee shops. Shoppers and vendors alike find added attractions in the free-market areas, and the marketing process can become an enjoyable activity. Thus, free markets provide bright touches of color—psychologically as well as physically—in towns that are often best described as grey on grey.

Finally, and perhaps most important, the free markets serve as a vehicle for modernization by forging links between rural and urban places. Peasants who go to cities to sell their produce inevitably are exposed to urban life styles, values, and attitudes. At the most basic level even the mobility between commune and town introduces an element of modernization since it broadens the scope of peasant activities and establishes contacts between persons from different types of environments. Moreover, free markets in small towns often include vendors of small household items or farm tools, who introduce new types of equipment to rural consumers. Some cities, such as Jinan, even encourage some of their unemployed young people to undertake such enterprises, thereby further strengthening the rural-urban linkages.

Furthermore, peasants who come to cities are exposed to consumer goods available in cities and may use the opportunity of being in the city to make purchases to take back to their villages. Peasants also take advantage of urban amenities, such as cinemas and public baths. They thereby contribute directly to the urban economy. Many officials believe that by having access to urban amenities on a regular basis, peasants will be much less likely to want to move into the cities. That may be true of peasants living close to large urban places, but it is much less likely to be characteristic of persons living in more distant rural places. Exposure to urban amenities may have the effect of increasing a peasant's desire to move to a city.

CONCLUSIONS

As modernization in China proceeds, migration is likely to become an important mechanism for achieving national development goals. The challenge for policymakers will be how to channel population redistribution without overwhelming the existing large cities and placing undue burdens on their infrastructures. As the discussion of China's migration policies has indicated, current regulations governing permanent relocation are specifically designed to exercise such control through the administration of the household registration system. The policy is only partially successful since a variety of government and work units can give permission for relocation and their plans are not usually coordinated. Nonetheless, it is also clear that, without a policy of controlled migration, the volume of such movement would have been many times greater and problems of urban overcrowding infinitely exacerbated.

As new economic policies are instituted in urban areas, controlling migration may become much more difficult. Individual enterprises are being given much more latitude in decision making and much more control over management, including determining the size of the labor force. Economic planning, which may include plans to expand a given factory or other enterprise, will therefore be even more decentralized than it has been in the past, and it will become even more difficult to coordinate the movement of personnel between specific locations. This problem may be compounded because specialists and technical personnel are themselves being given much greater freedom in some locations to choose appropriate jobs where they believe their skills can be best utilized (*China Daily,* 19 December 1984).

While strongly favoring the growth of small cities and towns as alternates to bigger city growth, and while determined to control the growth of big cities, Chinese planners seem increasingly to recognize the important role that larger cities can play in China's overall development as well as in the development of smaller urban places and the rural hinterlands of the big cities. This awareness manifests itself in several recent developments. A few big cities, such as Chongqin, Wuhan, and Shanghai, have been encouraged to help smaller places by providing technical expertise and financial support, and by sponsoring local industrial establishments. In this way it is hoped that the greater integration achieved will stimulate the growth rate of smaller urban places and encourage movement to them (*Beijing Review* 1984). In another development, fourteen coastal cities in China have been designated economic development zones, to join the four special economic zones as centers of foreign business investment. The port cities are to be allowed to practice flexible economic policies and to establish technical development districts where manufacturing, commercial, and scientific facilities will be located (*China Daily*, 14 July 1984). Chinese planners maintain that this will not lead to rural-to-urban migration; rather, these centers are expected to rely on their own labor supply or on migrants from other urban places in the same general area.

Inevitably, these policies bring into question whether China can assign new development roles to these large cities and concurrently succeed in its goal of strictly controlling the demographic growth of big cities through limiting migration to them. Success in the efforts to achieve greater development and leadership at the center, especially when this will involve expansion of manufacturing, commercial, and technological activities, is expected to lead to a demand for more workers than are available from the cities' resident populations. Especially if current restrictions on migration are relaxed in the interest of more efficiently matching skills with needs, migration to these cities may take on increased importance.

At the same time as new urban policies are being introduced, institution of economic reform in the countryside–the agricultural responsibility system–has greatly increased temporary mobility. One of the functions of the responsibility system is to provide the mechanism whereby surplus rural labor (much of it associated with more efficient agricultural production methods) can turn to nonagricultural activities while still largely maintaining a rural base. It is also hoped that the system will foster changes in nonagricultural rural production that will provide the basis for small-town development. To achieve these goals, peasants are being encouraged to develop a more diversified economy; to establish joint enterprises combining agriculture, industry, and commerce; and to establish service industries and cultural and educational facilities in market towns and commune seats. All of these changes will mean the movement of peasants from their villages into more built-up areas even while most maintain their official registration in their villages.

Their status as rural-registered individuals may change quite rapidly during the latter half of the 1980s. The Chinese government is actively promoting the creation of new towns. A set of criteria published at the end of 1984 (*People's Daily,* 30 November 1984) allows for the redesignation of villages from township to town government if they have fewer than 20,000 inhabitants of whom more than 2,000 are engaged in nonagricultural activity, or if they have more than 20,000 inhabitants of whom 10% or more are in nonagricultural occupations. In remote or minority areas a town government can be established even if fewer than 2,000 of the population are engaged in nonagricultural work. Under these new criteria, the number of small towns was expected to rise to 10,000 by the end of 1984 (Li Huahong 1984).

What are not spelled out in the new regulations are the rules governing transfers of household registers. Since the newly created towns will contain mostly populations already resident there, only a change in status of household register–from rural to urban–will be involved. But since such towns are also expected to draw people from the surplus labor force of the surrounding rural areas, as the county towns already do, some population redistribution is envisaged. In late 1984 a document released by the State Council stipulated that peasants engaged in nonagricultural work may obtain town registration in towns at the commune level (*People's Daily,* 22 October 1984). The question then becomes whether acquisition of registration in commune towns, and perhaps later in county towns, will satisfy the people's desire for living in an urban place. It may instead only whet their appetites for living in larger, more truly urban locales where their consumer goals and aspirations for themselves and especially for their children might be more easily realized.

As has been documented, other surplus rural laborers are becoming temporary residents of cities, thereby serving as an important link between rural and urban places. They provide much needed service work and agricultural produce in cities, and their earnings help to raise rural standards of living. They are also becoming more familiar with urban amenities, however, so that as rural income and consumer demands rise, these rural-to-urban circulators may form a strong force for permanent migration to cities. Such temporary migration may thus eventually defeat the benefits that it is seen as bestowing on both rural and urban locations.

Nonetheless, during a period of rapid economic change, temporary mobility provides a flexible adjustment mechanism for China's population. As the economic situation continues to change, creating more labor surplus in rural areas and concurrent consumer demands in both urban and rural places, population mobility will become an increasingly important way to reestablish equilibrium. Given China's restrictive policies on rural-to-urban permanent relocation, temporary moves may be the best response to current needs. As the situation develops, and as policymakers come to recognize both the desirability of population redistribution and the fact that a considerable amount of such movement has already occurred de facto, if not de jure, migration policies are likely to change. Indications of this modification of policy are already apparent, explicitly and implicitly, in the new regulations for town development. But whether policies can be implemented that allow for greater freedom of movement while controling the growth of the metropolises remains to be seen.

It is fortunate that the introduction in 1979 of the responsibility system and the urbanization policies adopted in the 1980s occurred around the time of the 1982 Census. As a result, data from the census can provide baseline information on the structure of the urban hierarchy and allow comparisons of the urban and rural populations at a point when efforts were begun to foster small-city and town growth and to absorb surplus rural labor in nonagricultural activities and in towns. Detailed tabulations from the census (not available at the time this paper was being prepared) can be used, as well, to analyze the demographic situation of the cities designated as special economic centers. Such analyses should provide some indication of what those cities' future development is likely to be if efforts to limit migration succeed. Special interest here might focus on labor force needs in relation to development plans. Use of the 1982 data will also allow later surveys and censuses to evaluate more easily the current policies' success in achieving a more uniform distribution of the population and access of rural inhabitants to a better quality of life.

Census data can thus be a valuable source for analyzing China's overall urban situation as well as for assessing the potential labor force requirements of specific areas. The 1982 Census, however, did not include any direct question on population mobility. Information on migration is essential for a full understanding of spatial population distribution and regional inequities. Questions on migration should therefore be included in the next census, and much fuller use should be made of existing data in the population registers for assessing annual changes. Beyond this, surveys can be useful in supplementing registry data to monitor changes between censuses and in providing information on mobility–such as permanent moves, circulation, and commuting–not covered in the registry system. They can reveal how various forms of movement meet individual needs and how they fit into the larger development efforts. Such surveys are being planned by the Population Research Institute of the Chinese Academy of Social Science in various locations in China. If carried out, they should provide important insights into the role of population mobility in China's modernization efforts.

Interest in population mobility in China stems both from concern about its effects on the quality of life in rural and urban China and from the lessons it may provide for other developing countries. Because of rapid population growth in many developing countries and interest in reducing poverty and rural-urban inequalities, growing attention is being focused on the relation between population movement and development, on the ways in which migration contributes to the exacerbation of urban problems, and on the ways in which rural development efforts affect and are affected by population movement. A particular concern is the growing rural population reservoir, which will have to be provided with adequate opportunities for livelihood in rural areas or in small towns and cities if massive rural-to-urban migration is to be avoided. Assessments of China's efforts to control urban growth by controlling population movement, of its experience with reliance on temporary movement, and of its attempts to develop small towns as alternative urban destinations should prove valuable for other developing countries despite differences in political structure.

In particular, the following questions need to be answered. To what extent does one or another form of mobility in itself or in combination relieve rural pressures? To what extent does temporary migration in the form of commuting or circular movement relieve the problems that cities such as Beijing, Chongqin, and Guangzhou would face if all temporary movers were to become permanent migrants? How much does the interchange between urban and rural places, and particularly that of commuters and return migrants, contribute to the modernization of rural areas through the introduction of new values and behavior, and through the remittances of money and goods? How much do such remittances and the funds and goods brought back by temporary migrants contribute to the reduction of rural-urban inequities? Does the Chinese experience suggest that governments of developing countries should encourage commuting and circular movement as an alternative to permanent migration? How do development efforts such as improved transportation and educational systems and mechanization of agriculture affect the levels of migration and circulation? Can small towns be relied upon as effective alternatives to cities in meeting peasant aspirations for urban residence, or will they merely serve as stepping-stones to the bigger cities?

For China, as for other developing countries, available evidence and the research questions raised suggest that in developing a planning strategy, it is important to stress linkages rather than the differences between urban and rural populations. The available evidence (Goldstein 1978) indicates that this can be done best by recognizing that many people in developing countries are neither exclusively rural nor exclusively urban because of their bilocal or even multilocal residence patterns. The interests of these movers and of their rural and urban communities can best be served by policies that take account of the needs of the resident populations in both locations as well as those who move between them. For such policies to be successful also requires that the research agendas of China and other developing countries give increased priority to all forms of population movement.

REFERENCES

Beijing Review

1984 Economic reform: Facts behind the Shanghai Economic Zone. Vol. 27 (April 16):16–23.

Chapman, Murray, and R. Mansell Prothero

1982 Themes on circulation in the Third World. Working Paper No. 26. Honolulu: East-West Population Institute, East-West Center.

China Daily

2 March 1983. New jobs from shrinking farmland.

10 March 1983. Peasant builders to take on bigger role.

14 July 1984.

26 September 1984. Small rural towns—reservoirs for surplus labor force.

6 November 1984. New openings for surplus farmers.

6 December 1984. Itinerant workers flocking to Tianjin.

19 December 1984. If jobs don't fit, experts may quit.

Davis-Friedmann, Deborah

1983 *Long Lives: Chinese Elderly and the Communist Revolution.* Cambridge, MA: Harvard University Press.

Ding Yisheng

1984 Urban rural distribution of China's population. *Renkou Yanjiu [Population Research]* 4 (July 29):14–17.

Fei Xiaotong

1983 *Chinese Village Close-up.* Beijing: New World Press.

1984 Planning of population growth and distribution. *China Reconstructs* 33 (May):24–27.

Findley, Sally E.

1977 *Planning for Internal Migration.* Washington, D.C.: Government Printing Office.

1982 *Migration Survey Methodologies: A Review of Design Issues.* IUSSP Papers, No. 20. Liège: International Union for the Scientific Study of Population.

Goldstein, Sidney

1978 *Circulation in the Context of Total Mobility in Southeast Asia.* Paper No. 53. Honolulu: East-West Population Institute, East-West Center.

1985 *Urbanization in China: New Insights from the 1982 Census.* Paper No. 93. Honolulu: East-West Population Institute, East-West Center.

Goldstein, Sidney, and Alice Goldstein

1981 *Surveys of Migration in Developing Countries: A Methodological Review.* Paper No. 71. Honolulu: East-West Population Institute, East-West Center.

1984 Population movement, labor force absorption, and urbanization in China. *Annals of the American Academy of Political and Social Science* 476 (November):90–110.

Griffin, Keith, ed.

1984 *Institutional Reform and Economic Development in the Chinese Countryside.* Amrok, NY: M.E. Sharpe, Inc.

Koshizawa, Akira

1978 China's urban planning: Toward development without urbanization. *Developing Economies* 16 (March):9–13.

Li Chengrui

1983 On the results of the Chinese census. *Population and Development Review* 9 (June):326–44.

Li Huahong

1984 Fresh towns to absorb migration from farms. *China Daily,* December 1.

Liu Chenlie

1982 How a free market operates. *China Reconstructs* 31 (May):42–43.

Lu Baifu

1983 The way for agriculture. *Beijing Review* 26 (January 24):14–17, 21.

People's Daily [*Renmin Ribao*]

20 January 1984. Document No. 1.

9 September 1984. China has more than 5,000 towns.

22 October 1984. New policy to allow peasants to become town residents.

30 November 1984. New criteria of town establishment.

Pryor, Robin J., ed.

1979 *Residence History Analysis.* Studies in Migration and Urbanization, No. 3. Canberra: Department of Demography, Australian National University.

Skinner, G. William

1976 Mobility strategies in late Imperial China: A regional systems analysis. In *Regional Analysis,* Vol. 2, *Social Systems,* edited by Carol A. Smith, pp. 327–64. New York: Academic Press.

Solinger, Dorothy J.

1983 Temporary residence certificate regulations in Wuhan. Research Note, University of Pittsburgh.

State Statistical Bureau

1982 *Major Figures on the Third Census of Population of China.* Beijing: China Statistical Publishing House.

1983 *Ten Percent Sampling Tabulation on the 1982 Population Census of the People's Republic of China.* Beijing: China Statistical Publishing House.

United Nations

1980 *World Population Trends and Policies, 1979 Monitoring Report,* Vol. 2, *Population Policies.* Population Studies, No. 70. New York.

United Nations, Department of International Economic and Social Affairs

1982 *World Population Trends and Policies, 1981 Monitoring Report,* Vol. 2, *Population Policies.* Population Studies, No. 79. New York.

Ye, Shuzan

1982 Urbanization and housing in China. *Asian Geographer* 1:1–11.

Yeh, Anthony Gar-On, and Xueqiang Xu

1984 Provincial variation of urbanization and urban primacy in China. *Annals of Regional Sciences* 18 (November):1–20.

Zelinsky, Wilbur

1971 The hypothesis of the mobility transition. *Geographical Review* 61 (April):219–49.

Zhou Guang-sheng

1984 On the role played by household registration materials in China's 1982 Population Census. Paper presented at International Seminar on China's 1982 Population Census, Beijing.

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Factors in the achievement of below-replacement fertility in Chiang Mai, Thailand

Tieng Pardthaisong

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ABSTRACT This study investigates the contribution of family planning programs to the decline of fertility in Chiang Mai Province. Family planning programs were introduced into the province in 1963. The analysis is based on a random sample of 3,805 ever married women from a demographic sample survey conducted in Chiang Mai Province between 1979 and 1980.

Despite large differences in degrees of modernization between Chiang Mai City and the rural areas of the province, fertility has fallen rapidly in all sectors of the population. In Chiang Mai City, fertility began to decline rapidly after 1954–58 in every age group, especially among older women, and reached a level lower than replacement in 1974–78. In the periurban, rural, and remote rural populations the fertility decline started after 1959–63 from higher levels but was more rapid than that of the city population. By 1974–78 all sectors of the Chiang Mai population had almost equally low fertility levels.

Age at marriage in Chiang Mai Province increased only slightly between 1960 and 1980, but the tendency of urban women to marry at later ages than rural women persisted. There is no evidence of a change in marital stability during the study period. The increase in age at marriage can account for only a small share of the observed fertility decline.

Most of the rapid fertility decline in the Chiang Mai population can be attributed to the family planning programs, for the following reasons. First, although older women in Chiang Mai City accepted modern contraceptives more readily than those in the rural areas, the difference in acceptance rates diminished in the younger age groups, which had been exposed to the programs; within the most reproductive age group at the time of the survey the proportions of contraceptive acceptors were equal in all study areas. Second, only a small proportion of women with very low fertility did not use modern contraceptives. The study thus concludes that family planning programs are one of the best possible means of slowing population growth rates to desired low levels in both city and rural populations.

As one of the first programs of its kind in Thailand, a family planning program was introduced at Chiang Mai's McCormick Hospital in 1963, seven years before the start of the Thai National Family Planning Program. Since then additional programs have been established, including an urban family planning clinic in Chiang Mai City begun in 1967 and a mobile family planning unit with 38 work points that has served a rural population since 1969. In 1967 the Thai government launched a pilot project of distributing oral contraceptives through its first- and second-class health centers. From 1972 onward much of the family planning work was done by auxiliary nurse-midwives based in government midwifery stations.

The intrauterine device (IUD) was the first modern contraceptive method to be introduced on a wide scale in the Chiang Mai area (1963). It was followed by the injectable contraceptive Depo Provera (1965). Owing to the popularity of Depo Provera, Chiang Mai has what may be the largest injectable contraceptive program in the world.

The early introduction of family planning programs and the varied types of clinics and contraceptive methods have distinguished the Chiang Mai population program from others in Thailand. If family planning services contribute to slowing population growth, then the program in Chiang Mai deserves attention from policymakers interested in reducing population growth rates.

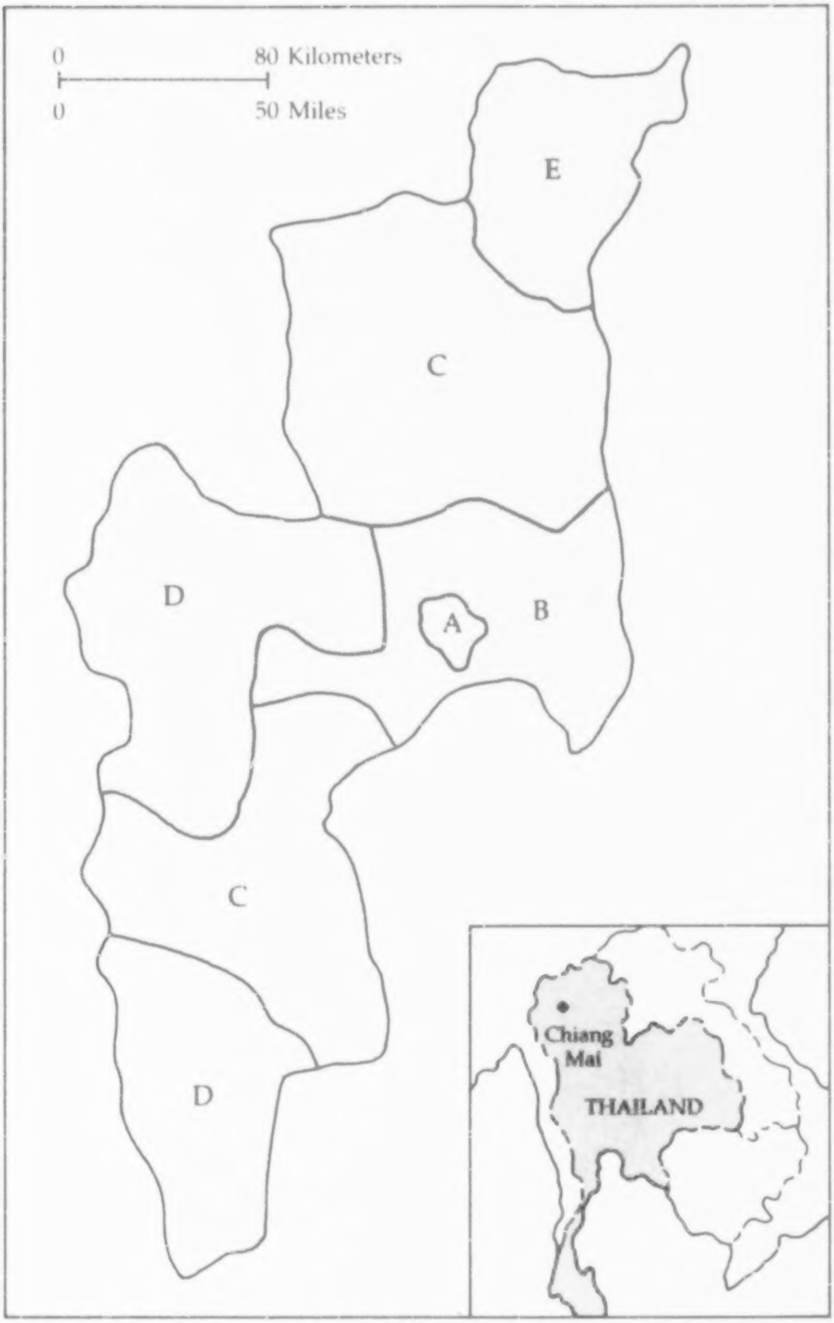
PURPOSE AND BACKGROUND OF THE STUDY

The present study aims to document the fertility decline in Chiang Mai and to assess the impact of family planning programs and other intermediate variables on the fertility of Chiang Mai women. Drawing on findings from a demographic sample survey, the paper compares socioeconomic characteristics and attitudes toward family size of Chiang Mai's urban and rural populations, describes the patterns of fertility decline in each study area over the period from 1954 to 1978, and examines the importance of nuptiality and family planning accessibility in accounting for Chiang Mai's rapid fertility decline.

The findings show that fertility has declined rapidly to below the replacement level among both urban and rural populations of Chiang Mai despite socioeconomic differences between study areas. Differences in marriage patterns have had a negligible effect on fertility. Widespread knowledge and acceptance of contraception among all sectors of Chiang Mai Province's population are responsible for most of the decline in birth rates.

A rapid fertility decline in Chiang Mai beginning in 1964 has been documented by a previous study (Pardthaisong 1978) based on birth registrations during 1950–75, by Thailand's population censuses of 1960 and 1970, and by school registration figures for 890 primary schools over the period from 1962 to 1974. The total fertility rate in Chiang Mai Province fell by almost 50% between 1960 and 1975. Moreover, the 1978 study indicated that four areas of the province containing 93% of its population (areas A, B, C, and E in Figure 1) began to experience fertility declines at the same time, in 1964. Fertility began to decline somewhat later in study area D, where most people live in isolated, mountainous settlements. The study found that changes in marriage patterns between 1960 and 1970 were insufficient to explain the rapid drop in birth rates but that the fertility decline did coincide to a considerable extent with the expansion of family planning programs in the province

A 1976 demographic sample survey by Shevasunt et al. in rural areas of Chiang Mai and in nearby Chiang Rai Province found that birth rates began to fall about five years earlier in Chiang Mai than in Chiang Rai and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Source: Pardthaisong (1978, figure 4).

Figure 1. Chiang Mai Province, divided into five study areas having varying degrees of accessibility to Chiang Mai City

that Chiang Mai's fertility decline was somewhat closer to completion (Shevasunt et al. 1978). The marital total fertility level in Chiang Mai was estimated to be 4.42 children per woman in 1968 and 2.29 in 1976; corresponding estimates for Chiang Rai were 5.38 in 1968 and 3.41 in 1976. The fact that family planning programs were introduced five years later in Chiang Rai than in Chiang Mai indicates that fertility decline was more or less coincident with the introduction of family planning services in each province.

The survey by Shevasunt et al. agrees well with my own previous study referred to above, but it has several important limitations. The sample size was relatively small (796 women in Chiang Mai and 997 women in Chiang Rai), the fertility estimates could be made back to 1968 only, and the estimated values for some years were lower than those from estimates based on incomplete birth registrations.

The present study differs from previous studies in that it focuses entirely on Chiang Mai Province, includes both the urban and rural populations of the province, and has a larger sample size. Altogether, 3,805 ever married women were interviewed during 1979–80. Their fertility levels can be reliably estimated as far back as the 1950s, a period before the introduction of family planning programs in Chiang Mai, and comparisons can be made between the city of Chiang Mai and rural areas. That fertility levels before the introduction of family planning programs are known is important for evaluating the programs' impact. Comparisons between city and rural areas provide a better basis for developing family planning strategies to reduce population growth rates to desired levels.

AREA STUDIED AND STUDY DESIGN

Chiang Mai Province, the setting of this study, is the seventh largest of Thailand's 71 provinces and the second largest province in northern Thailand. Its central city, Chiang Mai, is 800 kilometers north of Bangkok. The terrain is mountainous, with interspersed plateaus and valleys. Transportation between population centers, primarily in the valleys and plateaus, varies in quality from excellent to very poor. The province's population was 798,483 in 1960, 1,026,450 in 1970, and 1,154,850 in 1980, the increases representing an average annual growth rate of 2.6% between 1960 and 1970 and 1.2% between 1970 and 1980. Almost 92% of its inhabitants in 1970 were rural, and there was no significant increase in the proportion of people living in municipal areas during 1970–80. The proportion of women of ages 15–44 who had four or more years of education increased from 40 to 64% between 1960 and 1970 and rose to 80% by 1980.

Chiang Mai is a large province, covering 22,993 km^2 and stretching for more than 300 km from south to north. The province comprises nineteen districts. For the purpose of this study, it is divided into five study areas (Figure 1).

Area A is Chiang Mai City, which in 1980 contained 182,134 people. Its population has good access to governmental and nongovernmental services.

Area B, comprising the seven urban peripheral districts surrounding Chiang Mai City, contained 455,366 people in 1980. Transportation by small buses from these districts to Chiang Mai is convenient during all seasons.

Area C, consisting of two parts, includes six rural districts whose combined population was 285,570 in 1980. Most of the population is concentrated in valleys. Transportation to Chiang Mai City is possible during all seasons.

Area D, also in two parts, consists of three rural districts which in 1980 had a population of 81,415, widely dispersed in mountainous areas. Transportation to Chiang Mai City is possible only in the dry season, and even then it entails some difficulty.

Area E consists of two rural northern districts. As of 1980 there were 150,362 inhabitants living in an isolated wide valley, with few opportunities to obtain services from Chiang Mai City.

A demographic sample survey of four of the five study areas was conducted in late 1979 and early 1980. Two stages of random sampling were used to select a statistically representative sample. The probability of selection was equal in study areas B, C, and E. Owing to the difficulty of communicating with the many hilltribe populations in area D, the study excluded that area, which comprises 7.1% of the province's population. Because the population of Chiang Mai City is small, the probability of being randomly selected for the sample was double that of the rural areas. The survey completed interviews with 3,805 ever married women: 841 in Chiang Mai City, 1,666 in the periurban sector (area B), 885 in the rural areas less accessible to Chiang Mai City (area C), and 413 in the rural population more remote from Chiang Mai City (area E).

In the sample households every woman who had ever married was interviewed. The interview covered questions about household members, the respondent's background, her pregnancy history, her knowledge and use of contraception, her marriage history, socioeconomic data, and her perception of the costs and benefits of having children. The questionnaires were from the World Fertility Survey (Basic Document No. 1 and Occasional Papers 19 and 12) and had been translated into Thai.

The interviews took place between January and September 1979 in rural areas and during March 1980 in Chiang Mai City. A research assistant and I enlisted the support of a village headman in each village before undertaking the interviews. The headman was asked to review a list of eligible respondents and to make appointments with the respondents for the interviews.

The data collection team consisted of six to nine interviewers. The headman and his assistant directed the interviewers to their assigned cases (approximately four to five cases a day for each interviewer). Every ever married woman under age 60 in the household was interviewed. The research director supervised the fieldwork. At the end of each day a research assistant checked the completed questionnaires for internal consistency and discussed any problems with the responsible interviewer.

SOCIOECONOMIC CHARACTERISTICS OF RESPONDENTS

Family planning services in Chiang Mai Province have been available to urban and most rural inhabitants since the 1960s, the exception being the hilltribe populations in the mountainous areas. The impact of family planning on birth rates should therefore be observable in both urban and rural areas. One question this study addressed was the extent to which differences in such characteristics of individuals as education and occupation affect contraceptive use where family planning services have been available for many years. Socioeconomic factors, including education, have been shown to be important correlates of fertility levels in many other populations.

The present study found that major socioeconomic differentials existed between the study areas. They included differences in education, use of electricity, ownership of modern consumer goods, housing conditions, and economic status.

Nearly everyone interviewed between the ages of 10 and 29 in each area had attended primary school (Table 1). Equally high percentages of younger males and females had received a primary school education regardless of residential area, though among older respondents greater percentages of males and residents of Chiang Mai City had attended primary school. A major difference in school attendance between the populations of Chiang Mai City and the rural areas emerged at the secondary and higher level. There the advantage enjoyed by males was also more pronounced, especially among older people and in rural areas.

Electricity was first introduced in Chiang Mai City and later spread to towns and villages of other districts in the province. At the time of the survey, differences in household electrical use between the city and rural populations were still large: users constituted 92% of surveyed households in the city, 62% in periurban areas, 22% in rural areas, and 29% in the remote rural areas.

Most of the survey population, especially those living outside Chiang Mai City, owned their own houses. Homeowners comprised 81% of the

Table 1. Chiang Mai residents who ever attended school, by school level, study area, age, and sex (%)

Age at interview	Chiang Mai City		Periurban area		Rural area		Remote rural area	
	Male	Female	Male	Female	Male	Female	Male	Female
Primary school								
10–14	99	99	100	99	98	99	100	98
15–19	100	99	99	99	95	98	99	97
20–24	99	98	98	98	96	89	97	94
25–29	99	98	98	96	97	86	96	90
30–34	98	98	95	99	88	80	100	83
35–39	98	96	97	90	91	87	98	81
40–44	94	91	89	86	89	77	85	78
45–49	94	90	92	85	79	77	89	71
50–54	97	86	90	72	82	66	74	56
55–59	87	62	74	32	68	36	70	21
60+	76	28	47	11	35	12	38	12
Secondary school or higher								
15–19	62	61	26	30	14	11	25	17
20–24	60	51	24	16	8	6	21	12
25–29	56	41	13	5	9	3	12	9
30–34	47	44	11	7	4	2	2	2
35–39	37	36	15	7	6	2	18	8
40–44	34	20	9	1	6	0	7	6
45–49	34	20	4	1	5	0	6	2
50–54	30	17	8	3	5	0	6	2
55–59	25	16	2	2	0	0	0	0
60+	25	2	2	1	1	0	5	0

Note: Data on males supplied by female respondents.

respondent families in Chiang Mai City, 93% in the periurban areas, 96% in the rural areas, and 91% in the remote rural areas. Most of the families built the walls and floors of their houses with permanent materials such as wood or concrete. Residents in Chiang Mai City had the lowest proportion (7.5%) of houses constructed of less permanent materials, such as bamboo; the proportions were 21% in periurban areas, 17% in rural areas, and 28% in the remote rural areas. Similarly, proportionately fewer homes in Chiang Mai City had roofs made of impermanent materials (e.g., grass, leaves, or dirt) than in the other survey areas.

Residents of Chiang Mai City owned more modern conveniences such as refrigerators, television sets, radios, and sewing machines than did residents in the other survey areas (Table 2). Only bicycles were owned by more people in the periurban and remote rural areas than in Chiang Mai City. The most common possession of all groups was a radio, which nearly all households owned.

More very poor people were living in the rural and remote rural areas than in the city and the periurban areas (Table 3).

Table 2. Households owning selected modern conveniences, by study area (%)

Convenience	Chiang Mai City (N = 841)	Periurban area (N = 1,666)	Rural area (N = 885)	Remote rural area (N = 413)
Refrigerator	47	8	2	7
Television set	60	14	2	3
Air conditioner	3	0	0	0
Radio	92	85	80	82
Watch	87	51	35	43
Sewing machine	48	28	19	20
Bicycle	61	70	46	68
Motorcycle	55	34	23	25
Car	23	6	3	6

Table 3. Households in specified economic categories as estimated by interviewers, by study area (%)

Economic status	Chiang Mai City (N = 841)	Periurban area (N = 1,666)	Rural area (N = 885)	Remote rural area (N = 413)
Very poor	14	25	34	30
Poor	4	7	13	8
Below average	22	8	12	10
Average	38	45	33	38
Above average	2	2	2	3
Good	17	11	4	9
Very good	3	1	1	2
Unknown	0	0	1	0
Total	100	100	100	100

Notes: Percentages may not sum to 100 because of rounding. Interviewers were asked to estimate the economic status of each respondent's household immediately after completing the interview. Although this estimation method was subjective, it was believed to be reasonably accurate.

FAMILY-SIZE PREFERENCES

Respondents were asked about their ideal family size, planned completed family size, and the number of live births they had already experienced (Table 4). The number of children considered to constitute an ideal family size in Chiang Mai Province was remarkably low. The mean ideal was 2.8 children per ever married woman in Chiang Mai City and 2.7 in all rural areas. Eighty-one percent of respondents wanted a family of three or fewer children, and half (49.7%) considered a family of two children to be ideal. This ideal is small compared with findings from village surveys (McDaniel and Pardthaisong 1973) in Chiang Mai in 1967 and 1969, in which 46.7% and 47.2% respectively of ever married women identified a family size of three children as ideal. The difference between those findings and the more

Table 4. Ideal family size, planned family size, and number of live births of women in Chiang Mai City and all rural areas, by age

Study area and age at interview	Ideal family size (no. of children)		Planned family size		Live births	
	Mean	SD	Mean	SD	Mean	SD
Chiang Mai City						
15–19	2.3	0.9	1.9	1.1	0.3	0.5
20–24	2.1	0.6	1.8	0.8	1.1	0.7
25–29	2.4	0.8	2.1	0.9	1.5	1.0
30–34	2.3	0.8	2.4	0.9	2.0	1.1
35–39	2.7	1.5	3.2	1.7	3.1	1.8
40–44	2.9	1.6	3.7	2.3	3.7	2.3
45–49	3.2	1.6	4.6	2.2	4.6	2.2
50–54	3.4	2.0	5.0	2.8	5.0	2.8
55–59	3.1	1.6	5.2	3.1	5.1	3.1
All ages	2.8	1.5	3.6	2.4	3.3	2.6
All rural areas						
15–19	2.1	0.5	1.7	0.9	0.5	0.6
20–24	2.1	0.6	1.9	0.9	1.0	0.8
25–29	2.3	0.8	2.2	1.0	1.8	1.0
30–34	2.4	0.8	2.6	1.3	2.3	1.4
35–39	2.7	1.3	3.6	1.9	3.5	2.0
40–44	2.9	1.2	4.5	2.4	4.5	2.4
45–49	3.0	1.6	5.5	2.7	5.5	2.7
50–54	3.4	1.9	6.1	3.0	6.1	3.0
55–59	3.3	2.0	6.0	3.1	6.0	3.1
All ages	2.7	1.4	3.9	2.7	3.6	2.9

SD—standard deviation.

recent responses indicates that in the past decade ideal family size for both urban and rural Chiang Mai women declined to a small size.

Moreover, ideal family size was lower among younger women in both Chiang Mai City and all rural areas. Although mean ideal family size was more than three children for women of ages 45 and over, it was only slightly more than two children for women under 25. This finding suggests that younger women in Chiang Mai now consider replacement-level fertility to be the norm.

As with ideal family size, the survey found planned completed family size to be dramatically lower among younger women. Respondents 50 years old and older in Chiang Mai City had an average completed family size of more than five children, whereas women under age 25 planned to complete their families with an average of slightly less than two children. The findings were the same for women in rural areas. It is noteworthy that planned completed family size was smaller than ideal family size among women under 25, suggesting that their completed fertility may be well below the replacement level of 2.3 births.

Changes in actual family size, which can be observed from the mean number of live births, have been dramatic. Among women who have reached the end of their reproductive period, family size has been declining. Women in the age groups 30–34 and 35–39 had a mean number of live births almost equal to their planned completed family size. Women in the most active reproductive age group (25–29), however, needed an average of only 0.5 more children to attain their planned completed family size. The comparable figure for women under age 25 was 1.0 more children.

CHANGES IN FERTILITY SINCE THE EARLY 1950S

Birth-history analysis

To gain a better understanding of why family size has been reduced so dramatically in Chiang Mai Province over the past three decades, I estimated fertility levels and trends from birth-history data. This technique of fertility analysis has been discussed by Brass and Rashad (1980) and used by the World Fertility Survey to estimate fertility in many countries.

My Chiang Mai Fertility Survey differed from other fertility surveys in two ways. First, ever married women of ages 15–60 were interviewed, whereas most surveys include only women up to age 50 or less. The main advantage of including older women is that changes in completed fertility can be analyzed for longer time spans than would otherwise be possible. The other difference was the manner of dealing with the problem of unknown birth dates of children, which can be a severe limitation of this technique if the proportion of such unknown dates is large. Other surveys have coped with this problem by imputing birth dates, thus providing more complete coverage. The imputation method has been criticized, however, for being overly subjective. I therefore chose not to use imputation for the unknown dates and instead omitted such births.

Fertility levels presented in this paper are thus underestimated by the proportion of births of unknown dates, which varies from 0.9% in Chiang Mai City to 4.1% in the periurban areas (Table 5). The differences between individual rural areas were found not to be substantial. But among older women, unknown birth dates of children are common, and most of them are in birth orders 1, 2, and 3. Thus their effect on the estimated fertility level is to understate fertility levels in the early period being investigated.

Another source of possible bias in the fertility analysis is age heaping, the tendency of respondents to round their dates of birth to years ending in 0 or 5. But the Chiang Mai Fertility Survey obtained women's birth dates from household registration certificates. In addition, the age analysis is calculated from 1 January 1979 and the women's dates of births. Therefore, the possibility of bias due to age heaping in the current analysis should be diminished.

Fertility trends estimated from several sources

Total fertility rates of the Chiang Mai population from 1964 to 1978 calculated from three sources of data are shown in Table 6. The fertility levels and trends estimated from the Chiang Mai Fertility Survey data agree reasonably well with those reported in previous studies. They are higher than the

Table 5. Unknown birth dates of children, by age of women and study area (%)

	% of unknown birth dates				
Age of women at interview	Chiang Mai City	Periurban areas	Rural areas	Remote rural areas	All rural areas
< 20	0	0	0	0	0
20–24	0	0	0	0	0
25–29	0	0.8	0	0	0.4
30–34	0.5	0.3	2.1	2.6	1.3
35–39	0	3.2	0.7	0.5	2.0
40–44	0	2.6	2.5	0	2.2
45–49	0.2	3.4	3.1	3.1	3.2
50–54	2.2	5.7	3.7	7.9	5.3
55 +	3.8	9.0	9.4	14.9	9.6
All ages	0.9	4.1	3.1	3.8	3.7

Table 6. Fertility levels in Chiang Mai Province estimated from various sources

Year	Birth registration data	Chiang Mai Fertility Survey	Northern Thailand Fertility Survey
1964	4.90		—
1965	4.49		—
1966	4.29 (4.23)[a]	(4.92)	—
1967	3.86		—
1968	3.60		4.42
1969	3.32		4.00
1970	3.07		3.37
1971	2.98 (3.06)[a]	(3.27)	3.03 (3.32)[a]
1972	3.08		2.76
1973	2.83		2.93
1974	2.72		2.65
1975	2.67		2.49
1976	—	(1.85)	2.29
1977	—		—
1978	—		—

Sources: Birth registration data: Pardthaisong (1978, table 5); Chiang Mai Fertility Survey: derived from Table 8; Northern Thailand Fertility Survey: Chiang Mai University and University of Chicago (1979, table 3.3).

a. Average total fertility for five-year period.

values estimated from the vital registration data for the periods 1964-68 and 1969-73. This is what one would expect, since birth registration data are believed to be incomplete. In addition, the rate for 1969-73 (3.27 children per woman) agrees well with that derived from the Northern Thailand Fertility Survey (3.32).

Of note is the continuing fall of the fertility rate, to 1.85 in 1974-78, as estimated from the Chiang Mai Fertility Survey data. That level is significantly lower than replacement. The other two sources also suggested a downward trend but reported somewhat higher levels for the mid-1970s. Two possible factors may explain this. One is that many women in the Chiang Mai survey may have forgotten their children's birth dates or failed to report accurately the number of births they had during 1974-78. This seems unlikely because 1974-78 was the most recent period at the time of the survey. The other explanation might be that many women in every age group deliberately spaced their births in the period 1974-78 and thus affected the total fertility rate. This seems to be the case because the accelerated decline in fertility is evident in every age group between 1969-73 and 1974-78. As Table 7 shows, the fertility decline during this five-year period

Table 7. Proportion of 1964-78 age-specific fertility decline occurring between 1969-73 and 1974-78, by age and study area (%)

Age group	% of fertility decline	
	Chiang Mai City	All rural areas
< 20	48	43
20-24	19	44
25-29	29	33
30-34	36	47
35-39	38	31
40-44	44	59
45-49	71	66
Total	34	43

was equal to nearly 50% of the entire decline that had occurred since the mid-1960s.

As Table 8 and Figure 2 reveal, there has been a dramatic fertility decline in every age group since 1954-58 among women in Chiang Mai City and since 1959-63 among women in the other study areas. By 1974-78, fertility had reached levels lower than replacement in all study areas.

The amount of fertility decline has been directly correlated with women's ages, being 40% for the youngest reproductive age group and more than 80% in the oldest.

Fertility trends from 1960 to 1980 can be analyzed for each study area from 1970 and 1980 census data. Results based on Rele's (1976) technique and assumed life expectancies of women at birth of 60 and 65 years are shown in Table 9. These comparative results from birth-history data gathered in the Chiang Mai Fertility Survey and from census data should be viewed with caution. The periods used for the comparisons are not exactly the same And the defined populations are different; the birth-history data were obtained from village populations within 50 km of district towns, whereas the census data were drawn from the entire population.

Nevertheless, the two sources yielded similar estimates that signify a rapid decline of fertility from high to low levels in all study areas. The estimates based on census data yielded lower fertility levels throughout the period from 1960-65 to 1970-75, in conformity with generally lower estimates obtained when the reversal technique is used. For the last period (1975-80), however, the census data produced slightly higher fertility values than the birth-history data for Chiang Mai City and the periurban areas. Similar differences were more pronounced in the rural and remote rural areas, possibly because the census data were drawn from areas beyond 50

Table 8. Total fertility at exact ages among women in each five-year period from 1954-58 to 1974-78, by study area

Residence and exact age	1974-78	1969-73	1964-68	1959-63	1954-58
Chiang Mai City					
29	0.81	1.11	1.65	2.02	2.70
34	1.20	1.70	2.43	3.22	4.05
39	1.43	2.07	3.06	4.22	5.27
44	1.57	2.33	3.50	3.79	
49	1.59	2.41	3.60		
Periurban areas					
29	0.94	1.45	2.09	2.59	2.66
34	1.29	2.04	3.09	4.04	3.43
39	1.58	2.46	4.02	5.26	5.38
44	1.73	2.77	4.70	6.05	
49	1.76	2.88	4.92		
Rural areas					
29	1.22	1.97	2.32	3.10	3.13
34	1.48	2.52	3.43	4.38	4.83
39	1.77	2.99	4.26	5.62	6.01
44	1.93	3.40	5.02	6.27	
49	1.99	3.57	5.26		
Remote rural areas					
29	1.10	2.20	2.19	2.88	3.05
34	1.53	3.11	3.19	4.12	4.66
39	1.87	3.51	4.20	5.33	5.94
44	2.01	4.04	4.79	6.05	
49	2.06	4.16	5.01		
All rural areas					
29	1.05	1.71	2.16	2.77	2.85
34	1.38	2.34	3.19	4.15	4.43
39	1.68	2.77	4.11	5.36	5.64
44	1.83	3.14	4.80	6.12	
49	1.87	3.27	5.03		

km from district towns and were likely to include hilltribe people. Hilltribe populations usually have higher fertilitiy than the lowland populations.

Cohort analysis

Thus far we have been considering period analysis, which focuses on events affecting different groups at particular times. In contrast, cohort analysis considers the experience of one group of people over time. Data gathered

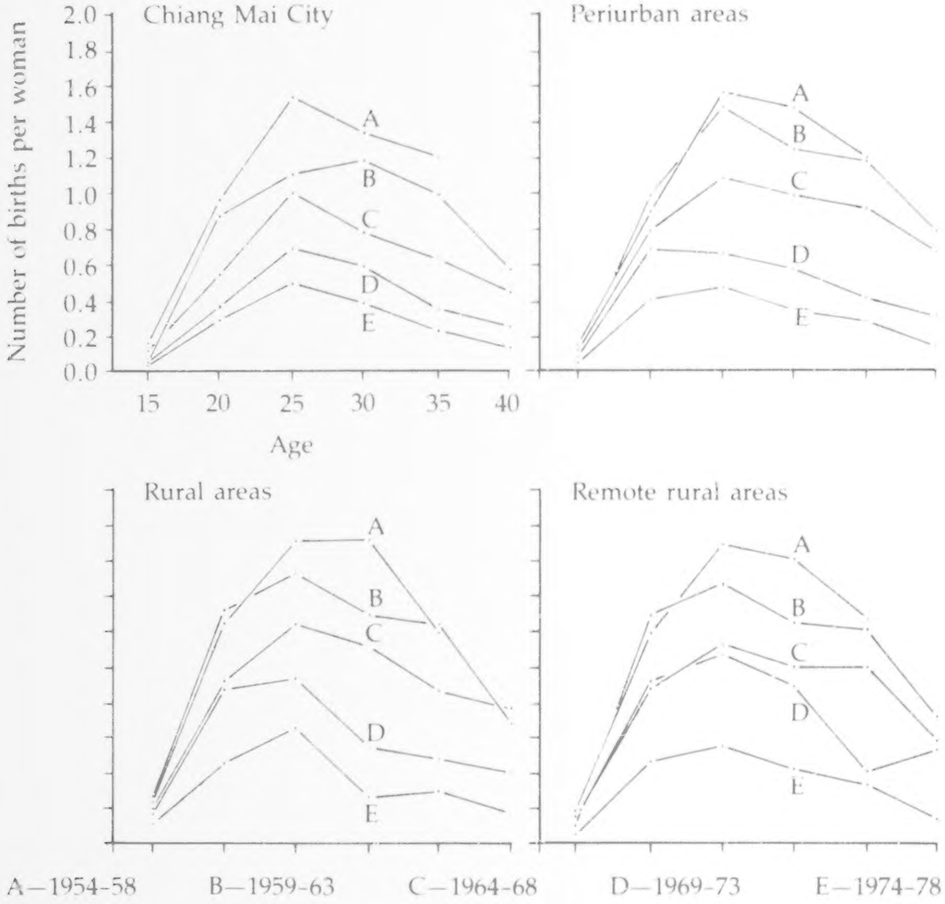


Figure 2. Fertility levels of the Chiang Mai population from 1954-58 to 1974-78, by study area

from different cohorts interviewed in the Chiang Mai Fertility Survey (Table 10) are of interest for a number of reasons.

The first and most striking is the dramatic decline in fertility observed in every successive cohort among women who were currently of reproductive age regardless of study area.

Second, fertility in every age group continued to fall even though it had already reached low levels. As a result, actual fertility of women in the most active reproductive ages was now very low. In Chiang Mai City, for example, by ages 30-34, eligible women had only 1.6 children. If this trend were to continue, it is unlikely that they would have enough children to replace themselves. This is also true for younger women in the other three study areas.

Table 9. Fertility estimates for 1960-80 based on 1970 and 1980 census data (with two assumptions of life expectancy) and on birth-history data from the Chiang Mai Fertility Survey, by study area

	Total fertility			
Source, assumption, and period	Chiang Mai City	Periurban areas	Rural areas	Remote rural areas
Census data (e^0 = 60)				
1960-65	4.5	5.9	6.0	6.4
1965-70	2.7	3.5	4.4	4.8
1970-75	2.2	2.3	3.4	3.3
1975-80	1.8	2.0	2.6	2.5
Census data (e^0 = 65)				
1960-65	4.4	5.7	5.8	6.2
1965-70	2.6	3.4	4.3	4.7
1970-75	2.1	2.3	3.3	3.2
1975-80	1.7	1.9	2.5	2.4
Birth-history data[a]				
1959-63	4.8	6.1	6.3	6.1
1964-68	3.6	4.9	5.3	5.0
1969-73	2.4	2.9	3.6	4.2
1974-78	1.6	1.8	2.0	2.1

a. Total fertility rates (obtained from Table 5) are for age groups up to 45-49 except in the period 1959-63, in which they are for age groups up to 40-44.

Third, fertility decline occurred almost simultaneously among women of different ages in all study areas. In Chiang Mai City, for example, the cohort born in 1934-38 experienced its greatest fertility decline at ages 25-29; for the cohort born in 1939-43, fertility declined most at ages 20-24; and for the younger cohorts, fertility decline took place at younger ages. A similar process took place in other study areas; that is, fertility declined in every age group at almost the same time. The fertility level of the youngest reproductive age group is already low among the cohorts born in 1954-58 or later, both in the city and in the periurban sectors. Fertility trends among young cohorts in the rural and remote rural areas suggest that fertility may reach similarly low levels in the near future.

Fourth, the fertility decline began earlier in Chiang Mai City than elsewhere, with the 1934-38 birth cohort when they were 25-29 years of age. In the remaining three study areas the fertility decline also began with the same cohort, but at ages 30-34 instead of ages 25-29 as in the city, suggesting that the decline in rural areas lagged behind that in Chiang Mai City by approximately five years.

Last, the eldest cohort (born in 1919–23) had significantly lower fertility rates at young ages than did cohorts born in 1924–28 and 1929–33. This was true in Chiang Mai City, the periurban areas, and the rural areas, but not in the remote rural areas. This finding suggests that women in the oldest age groups rounded upward the birth dates of their children born when the women were in their early childbearing years. It may be the result of underreporting of births by some women, especially in the eldest age group. Another factor in these older women's lower fertility may have been World War II. The study found that fertility levels of women who had been ages 15–19, 20–24, and 25–29 during 1944–48 (that is, ages 45–49, 50–54, and 55 or more at the time of the survey) were significantly lower than corresponding rates in 1949–53 and also slightly lower than comparable rates in 1939–43. The postwar baby boom may have occurred in the Chiang Mai population. Evidence from the age structure of the Chiang Mai population indicates that the war did affect fertility in the province.

Evidence from the age structure

If a fertility decline had actually been taking place since the 1960s, as documented by the birth-history data and previous studies already cited, one would expect to find changes in the age structure of the population. Figure 3 presents the age structures for Chiang Mai Province in 1960 and 1970 based on census data, and for Chiang Mai City and rural areas of the province in 1979–80 based on data from the Chiang Mai Fertility Survey. The age structure of Chiang Mai Province's population in 1960 is typical of a population with high fertility, whereas the changes observed in the age structure of 1970 (in age groups 5–9 and 0–4) suggest that birth rates had already begun to fall during the first half of the decade and had fallen more rapidly in the second. In addition, the changes in age structure of the city population in 1980 (age groups 0–4, 5–9, 10–14, and 15–19) demonstrate the continuing rapid decline in fertility into the 1970s. However, for the Chiang Mai rural population—for simplicity of presentation, I have combined the data for the periurban, rural, and remote rural areas—the changes in age structure of the three youngest age groups suggest that fertility began to decline there approximately five years later than in the city but that it fell more rapidly in the 1970s. Therefore, the changes in age structure of the Chiang Mai population since the 1960s confirm the existence of the rapid fertility decline hypothesized from birth histories of women in my sample survey.

Some other interesting evidence is the fluctuation in the 1960 age structure of Chiang Mai Province, notably in age groups 15–19, 20–24, and 25–29. The fluctuations were found again in the 1970 age structure (at ages 25–29, 30–34, and 35–39) and also in the age structures for the Chiang Mai City

Table 10. Mean number of children ever born (per woman) for women born between 1919 and 1963, by study area

Residence and birth cohort	Age group						
	20	20–24	25–29	30–34	35–39	40–44	45–49
Chiang Mai City							
1959–63	0.02						
1954–58	0.04	0.33					
1949–53	0.10	0.46	0.96				
1944–48	0.02	0.55	1.25	1.63			
1939–43	0.16	1.05	2.06	2.66	2.89		
1934–38	0.14	1.11	2.23	2.66	3.38	3.52	
1929–33	0.06	0.95	2.52	3.71	4.34	4.60	4.62
1924–28	0.05	0.53	1.76	3.10	4.11	4.54	4.62
1919–23	0.06	0.77	1.70	2.81	4.04	4.60	4.71
Periurban areas							
1959–63	0.05						
1954–58	0.08	0.49					
1949–53	0.16	0.85	1.34				
1944–48	0.08	0.91	1.59	1.94			
1939–43	0.16	1.17	2.27	2.86	3.15		
1934–38	0.09	1.00	2.51	3.51	3.93	4.07	
1929–33	0.06	0.86	2.45	3.90	4.83	5.14	5.17
1924–28	0.05	0.51	1.85	3.36	4.57	5.25	5.27
1919–23	0.07	0.69	1.77	2.98	4.19	4.99	5.21
Rural areas							
1959–63	0.10						
1954–58	0.16	0.62					
1949–53	0.18	1.05	1.71				
1944–48	0.24	1.16	2.10	2.35			
1939–43	0.18	1.50	2.73	3.28	3.56		
1934–38	0.16	1.40	2.93	4.04	4.51	4.68	
1929–33	0.03	1.11	2.81	4.10	4.94	5.34	5.41
1924–28	0.12	0.87	2.46	4.16	5.39	6.15	6.32
1919–23	0.08	0.64	1.49	2.83	4.00	4.65	4.89
Remote rural areas							
1959–63	0.07						
1954–58	0.19	0.66					
1949–53	0.15	1.07	1.63				
1944–48	0.11	1.00	2.09	2.53			
1939–43	0.19	1.47	2.62	3.53	3.87		
1934–38	0.12	1.28	2.76	3.76	4.16	4.30	
1929–33	0.03	0.89	2.59	3.83	4.85	5.38	5.42
1924–28	0.10	0.85	2.39	4.00	5.21	4.80	5.92
1919–23	0.11	1.28	2.67	4.06	5.33	6.06	6.28

Table 10. *(continued)*

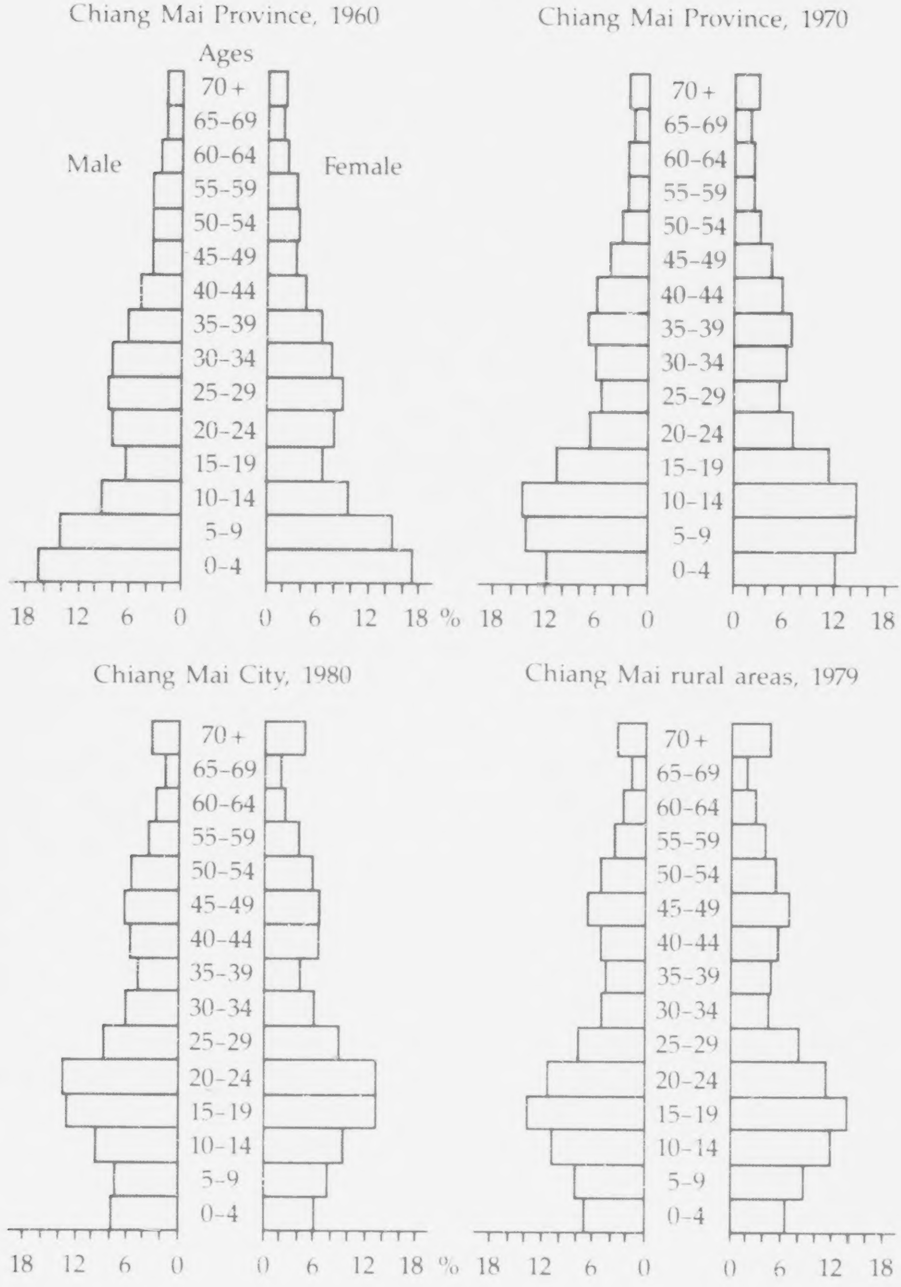
Residence and birth cohort	Age group 20	20–24	25–29	30–34	35–39	40–44	45–49
All rural areas							
1959–63	0.07						
1954–58	0.12	0.55					
1949–53	0.16	0.94	1.49				
1944–48	0.13	0.97	1.78	2.12			
1939–43	0.18	1.30	2.44	3.07	3.37		
1934–38	0.11	1.15	2.66	3.69	4.12	4.27	
1929–33	0.05	0.93	2.57	3.95	4.86	5.22	5.27
1924–28	0.08	0.65	2.08	3.66	4.88	5.57	5.70
1919–23	0.07	0.72	1.77	3.02	4.23	4.98	5.21

and the rural populations (at the ages 35–39, 40–44, and 45–49). Since the findings from the three sources of data are so consistent and the age structure of any population is mainly determined by changes in fertility level, all the evidence suggests that Chiang Mai Province experienced a fertility decline during the 1940s. Separation of young men from their wives during the war and food shortages and uncertainty caused by the war are all plausible explanations. A baby boom in the 1950s followed the end of the war.

Another interesting development that can be observed from the age structures for Chiang Mai is the increasing proportion of the population of age 60 or more. The increase could not be observed in 1960 or 1970, when the proportion of elderly persons was 6.0 and 5.8% respectively. But by 1979–80 the elderly population had grown to 7.1% among men and 9.0% among women in Chiang Mai City and 7.9 and 9.0% respectively in the rural areas. The increase was consistent with a decline in fertility during the previous two decades.

CHANGES IN THE MARRIAGE PATTERN

The remarkable decline in fertility over the past two decades in all study areas of Chiang Mai Province could have several explanations. In Chiang Mai, as in other parts of Thailand, childbearing is overwhelmingly confined to marriage or stable unions, and marriage itself signals the beginning of exposure to the risk of pregnancy. Unless marital fertility is controlled in such a society, the age pattern of first marriage, the proportion of persons who marry, and the patterns of marital dissolution and remarriage determine the overall level of fertility. The most important of these deter-



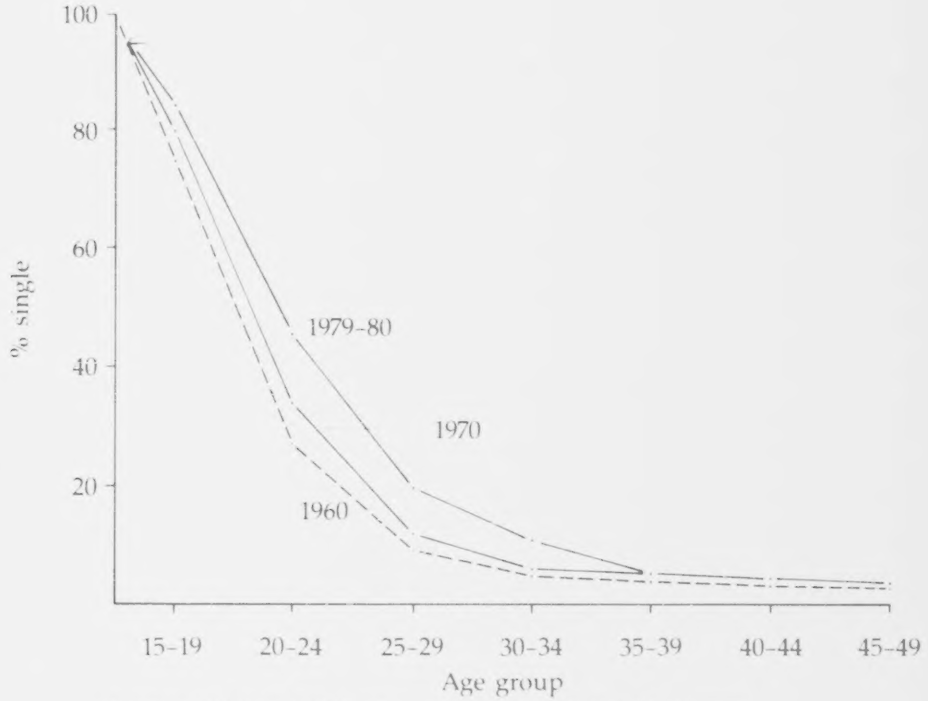
Chiang Mai Province, 1960

Chiang Mai Province, 1970

Chiang Mai City, 1980

Chiang Mai rural areas, 1979

Figure 3. Age structures of Chiang Mai Province (1960 and 1970), Chiang Mai City (1980), and rural areas of Chiang Mai Province (1979)



Sources: 1960 and 1970 censuses; Chiang Mai Fertility Survey.

Figure 4. Percentage of Chiang Mai women single in 1960, 1970, and 1978-80

minants are the age pattern of first marriage and the proportion who ever marry (Trussell 1980). The first factor to consider, then, as an explanation for Chiang Mai's fertility decline is the age pattern of marriage during the period 1960-80.

Evidence of a changing nuptiality pattern for the Chiang Mai population is presented in Figure 4. The marriage data are from the population censuses of 1960 (adjusted for age misreporting [Chamratrithirong 1976]) and 1970, and from the Chiang Mai Fertility Survey of 1979-80. Data for Chiang Mai City were weighted and then combined with those for rural areas. The proportion of single females in Chiang Mai Province was slightly higher in 1970 than in 1960 for all age groups. But the proportion was much greater in 1979-80 than in 1970, especially in the most reproductive age groups: 45.7% for women 20-24 years old, 19.7% among 25-29-year-olds, and 10.3% among women 30-34 (compared with 34.1%, 11.8%, and 5.2% respectively in 1970). The singulate mean age at marriage for women was 20.6 in 1960, 21.2 in 1970, and 23.0 in 1979-80. Thus delay in age at marriage has become more pronounced in the last decade.

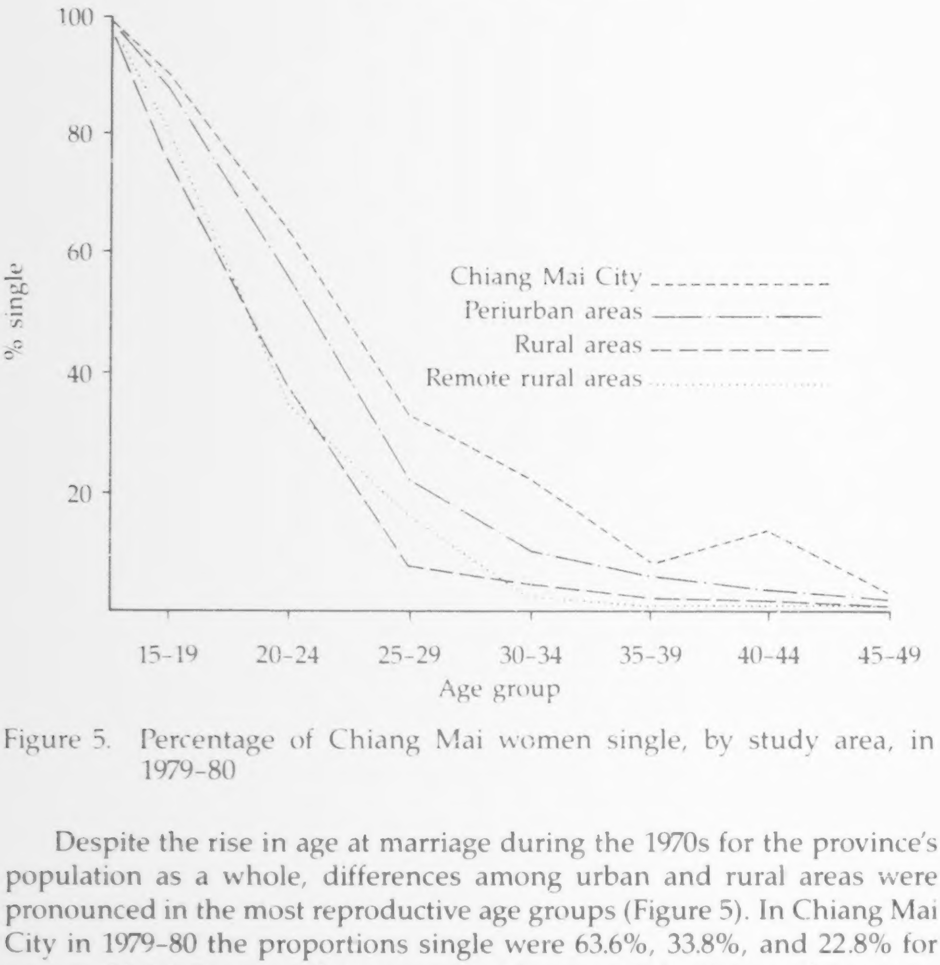


Figure 5. Percentage of Chiang Mai women single, by study area, in 1979-80

Despite the rise in age at marriage during the 1970s for the province's population as a whole, differences among urban and rural areas were pronounced in the most reproductive age groups (Figure 5). In Chiang Mai City in 1979-80 the proportions single were 63.6%, 33.8%, and 22.8% for women 20-24, 25-29, and 30-34 years old respectively. In periurban areas, however, they were 45.8%, 22.0%, and 10.1%; and in rural and remote rural areas combined they were 37.0%, 10.4%, and 3.1%. The singulate mean ages at marriage for women in 1979-80 were 28.0, 23.2, 21.6, and 21.4 years in the city, periurban areas, rural areas, and remote rural areas.

Despite the increasing delay in the age at marriage among Chiang Mai women, in itself it was unlikely to account for more than a small share of the observed fertility decline during the 1960s, although its impact was greater in the following decade. There are several reasons for drawing this inference. First, during the 1960s age at marriage increased only slightly but fertility fell rapidly. Second, despite the large differences in age at marriage between Chiang Mai City and the rural populations in 1979-80, fertility fell below the replacement level in all study areas. Third, as shown in

Table 11, there was no increase in age at marriage among ever married women in different cohorts, but their fertility (i.e., number of live births) nevertheless declined.

Nor did marital dissolution account for the rapid drop in fertility. Although marriage stability played a significant role in fertility differentials, as analyzed from this data set, there was no increase in marital instability between 1960 and 1979–80. Nor was there a significant difference in marriage stability between the city and the rural populations in the late 1970s. Therefore, the impact of marital instability on the rapid decline of fertility in this population is unimportant.

USE OF MODERN CONTRACEPTIVES

With a change in age at marriage ruled out as a major factor in the fertility decline, the next stage of analysis therefore examined the effect of contraceptive use, and specifically Chiang Mai's family planning programs, on fertility.

Knowledge of contraceptive methods was found to be widespread among Chiang Mai women in every age group. Nearly all women knew of a service location, the cost, and a mode of transportation for obtaining modern contraceptive methods such as orals, injectable contraceptives, IUDs, condoms, and male and female sterilization. In addition, more than half of the women surveyed were able to mention the contraceptive methods by name.

The survey also disclosed that high percentages of women living with their husbands were currently practicing contraception in all study areas. Most of the women not practicing contraception were either planning to have a child or believed they were infecund. This high level of contraceptive use explains the low fertility level found in the second half of the 1970s.

Response to questions about contraceptive use in the past revealed that older women in Chiang Mai City had accepted modern contraceptives more readily than those in the rural areas. But the gap between urban and rural women was narrower in the younger age groups. This explains why the fertility decline took place first in Chiang Mai City and later in rural areas. The data also showed that most women had begun to use contraceptives in the 1960s, a period when fertility fell precipitously. A third finding revealed by the data on ever use was that older women began using modern contraceptive methods when they had already had many children, whereas younger women had the advantage of being able to use modern contraception for controlling their fertility to a desired small family size. Data on actual fertility of survey respondents revealed that the only women who had never used contraceptives had had problems of infertility.

These findings are discussed in detail in the following sections.

Table 11. Mean age at first marriage and mean number of live births of Chiang Mai women, by study area and birth cohort, 1919-63

Study area and birth cohort	Number of women	Age at first marriage		Live births	
		Mean	SD	Mean	SD
Chiang Mai City					
1919-23	64	20.5	4.1	5.0	3.1
1924-28	102	21.4	4.5	5.0	3.1
1929-33	135	20.2	3.9	4.8	2.3
1934-38	121	20.4	4.4	4.1	2.3
1939-43	95	20.7	5.0	3.2	2.0
1944-48	89	20.7	3.4	2.2	1.2
1949-53	106	19.8	3.5	1.6	0.9
1954-58	97	19.0	2.4	1.2	0.8
1959-63	30	16.9	1.3	0.5	0.7
All cohorts	841	20.2	4.1	3.3	2.6
Periurban areas					
1919-23	141	20.9	4.4	6.0	3.1
1924-28	201	20.5	3.8	5.9	3.0
1929-33	258	20.2	3.5	5.6	2.7
1934-38	218	19.9	3.6	4.4	2.3
1939-43	192	19.3	3.5	3.5	2.2
1944-48	145	19.9	3.8	2.2	1.4
1949-53	220	19.0	3.5	1.8	1.0
1954-58	219	18.6	2.1	1.0	0.7
1959-63	62	16.7	1.5	0.6	0.6
All cohorts	1,666	19.6	3.5	3.6	2.9
Rural areas					
1919-23	62	18.8	3.3	5.4	3.0
1924-28	99	18.7	3.3	6.6	3.0
1929-33	121	19.1	3.0	5.6	2.8
1934-38	105	18.6	3.2	4.9	2.6
1939-43	82	18.9	3.1	3.7	1.7
1944-48	74	18.8	3.2	2.5	1.4
1949-53	147	18.8	3.0	1.9	1.2
1954-58	128	18.4	2.2	1.1	0.9
1959-63	65	16.6	1.3	0.5	0.6
All cohorts	885	18.6	3.0	3.6	2.9
Remote rural areas					
1919-23	18	19.6	6.1	7.4	3.3
1924-28	39	20.2	3.2	6.4	3.2
1929-33	63	19.2	2.9	5.8	2.7
1934-38	50	19.4	3.6	4.3	2.5

Table 11. *(continued)*

Study area and birth cohort	Number of women	Age at first marriage		Live births	
		Mean	SD	Mean	SD
Remote rural areas *(continued)*					
1939-43	53	19.1	4.7	3.9	1.8
1944-48	43	19.0	3.9	2.7	1.5
1949-53	57	18.3	2.5	1.1	1.2
1954-58	62	18.2	2.0	1.1	0.8
1959-63	27	16.0	1.6	0.5	0.6
All cohorts	413	18.8	3.5	3.6	2.9
All rural areas					
1919-23	221	20.2	4.4	6.0	3.1
1924-28	339	20.0	3.7	6.1	3.0
1929-33	442	19.8	3.4	5.6	2.8
1934-38	373	19.4	3.6	4.5	2.4
1939-43	327	19.1	3.6	3.6	2.0
1944-48	262	19.4	3.7	2.4	1.4
1949-53	424	18.8	3.2	1.8	1.1
1954-58	409	18.5	2.1	1.0	0.8
1959-63	154	16.6	1.4	0.5	0.6
All cohorts	2,964	19.2	3.4	3.6	2.9

Current contraceptive practice

Use of modern contraceptives by Chiang Mai women at the time of survey was high, especially among women in the age groups of 15-39 (Figure 6). Urban women in the most reproductive age group of 25-29 and in age group 30-39, however, were using contraception at a significantly lower level than nonurban women. The greatest use occurred in different age groups for different areas. For urban women it was ages 20-24 (74.4%); for periurban women, ages 25-29 (81.1%); and for rural and remote rural women, 30-34 (74.6 and 82.4% respectively). Interestingly, among the youngest reproductive age group, highest contraceptive use (74.4%) was in the rural areas.

Women in Chiang Mai City were using contraception differently from women in rural areas in two respects (Table 12). For them orals were the most popular method of contraception regardless of age group. In the rural areas orals were most popular only among women in age groups 15-19 and 25-29; for women in other age groups orals and injectables were used almost equally. Female sterilization was also more popular among young urban women than among their rural counterparts. Nearly a quarter (24.4%) of women between ages 30 and 34 in Chiang Mai City had chosen this per-

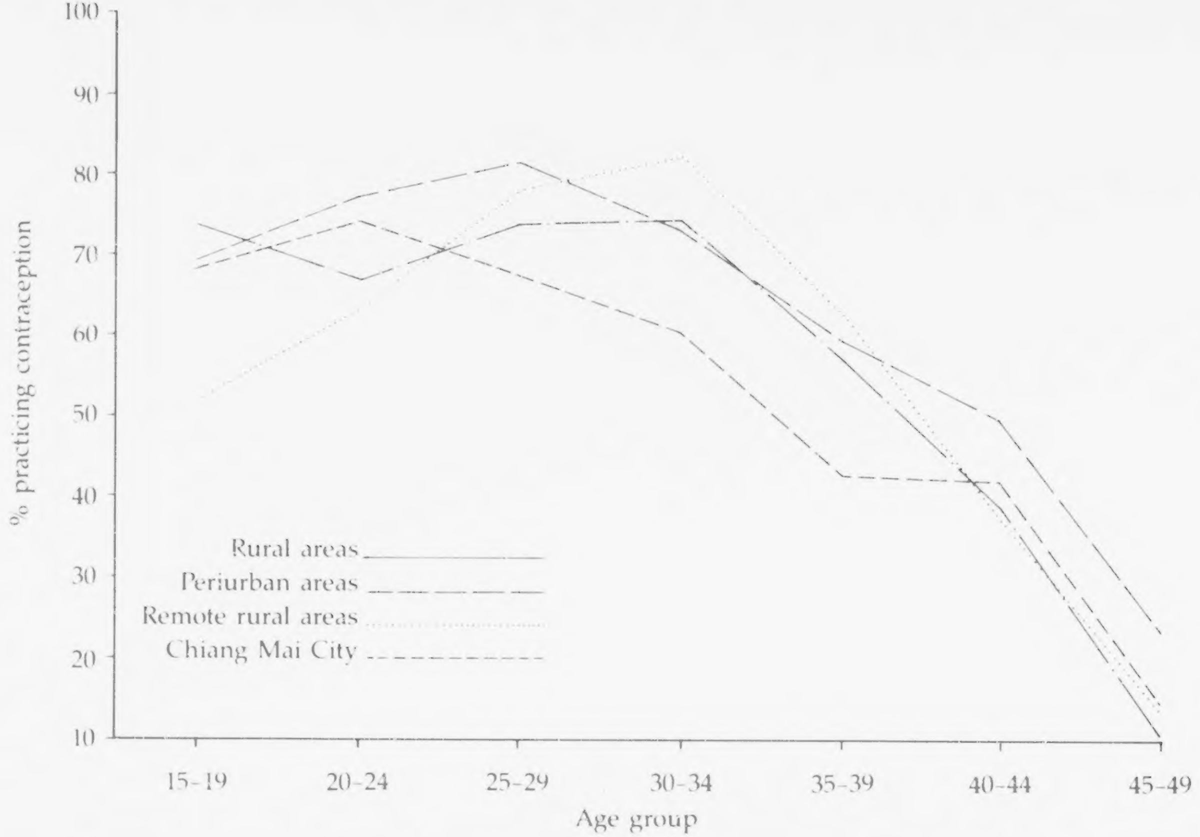


Figure 6. Percentage currently practicing contraception among women living with their husbands and not pregnant at the time of interview, by study area and age

Table 12. Percentage currently practicing contraception among women living with their husbands and not pregnant at time of interview, by study area, contraceptive method, and age

Study area and contraceptive method	All women ages 15–49	% of women by age group as of 1 January 1979						
		15–19	20–24	25–29	30–34	35–39	40–44	45–49
CHIANG MAI CITY								
Practicing contraception	51	69	74	68	60	43	42	15
Orals	18	55	38	25	15	10	10	4
Injectables	8	14	14	18	4	3	4	2
IUDs	3	0	5	5	0	0	5	1
Condom	3	0	4	2	9	4	0	2
Male sterilization	2	0	1	1	1	5	1	2
Female sterilization	14	0	10	16	24	19	17	3
Other methods	3	0	2	0	6	1	5	1
Not practicing contraception	50	27	26	32	40	57	58	85
Total	100	100	100	100	100	100	100	100
ALL RURAL AREAS								
Practicing contraception	58	68	72	78	75	65	45	19
Orals	24	43	34	35	29	22	16	5
Injectables	22	20	30	26	28	28	18	7
IUDs	3	2	2	4	2	2	3	3
Condom	1	1	1	0	1	1	0	0
Male sterilization	1	0	1	1	2	0	1	0
Female sterilization	6	0	3	10	12	10	5	3
Other methods	1	1	0	2	1	2	2	2
Not practicing contraception	42	32	28	22	25	35	55	81
Total	100	100	100	100	100	100	100	100

Note: Percentages may not sum to totals because of rounding.

Table 13. Ever married women who had ever used specified contraceptive methods, by age and study area (%)

Age at interview and and contraceptive method	Chiang Mai City	Peri-urban areas	Rural areas	Remote rural areas
Any method of contraception				
<20	76	79	76	71
20-24	93	88	82	80
25-29	85	92	87	86
30-34	87	86	86	90
35-39	87	78	75	85
40-44	72	68	63	67
45-49	54	56	34	38
50-54	36	21	13	11
55+	19	7	0	9
Age-standardized rate up to age				
30-34	88	88	85	84
45-49	78	77	70	72
55+	67	64	56	59
Oral contraceptives				
<20	67	58	65	63
20-24	74	71	72	61
25-29	71	73	76	65
30-34	63	66	72	71
35-39	66	53	60	65
40-44	37	38	46	39
45-49	26	29	21	15
50-54	14	7	7	2
55+	4	2	0	4
Age-standardized rate up to age				
30-34	69	69	73	65
45-49	55	54	57	51
55+	45	43	45	41
Injectable contraceptive				
<20	5	25	20	8
20-24	31	44	41	42
25-29	47	57	48	53
30-34	34	52	53	49
35-39	28	49	38	38
40-44	15	40	24	39
45-49	10	25	12	10
50-54	7	7	3	0
55+	0	1	0	0

Table 13. *(continued)*

Age at interview and contraceptive method	Chiang Mai City	Peri-urban areas	Rural areas	Remote rural areas
Age-standardized rate up to age				
30–34	36	49	45	46
45–49	26	43	34	37
55+	22	35	27	29
IUD				
< 20	0	10	2	0
20–24	13	6	2	5
25–29	10	9	7	14
30–34	7	3	5	13
35–39	6	9	8	6
40–44	10	9	4	9
45–49	3	7	1	4
50–54	3	3	0	0
55+	1	0	0	1
Age-standardized rate up to age				
30–34	10	6	4	10
45–49	8	7	4	8
55+	7	6	3	7

manent contraceptive method, compared with 12.1% in rural areas. (Among women in the 45–49 age group the respective percentages were 3.1 and 2.6.) These higher rates of acceptance among younger women suggest a growing acceptance of female sterilization. However, there seems to have been no increase in the popularity of male sterilization among either urban or rural populations.

Ever users of contraceptives

Analysis of the patterns of use by women who have ever used contraception helps to explain past levels and trends of fertility in Chiang Mai. As Table 13 shows, a higher proportion of urban women in the older age groups had used contraception than had older women in the periurban, rural, and remote rural areas. But marked differences between urban and rural women were found only in the oldest age group (50 or more); the gap was narrower in age groups 35–49 and was almost nonexistent in the most reproductive age groups in every study area. The age-standardized rate of use up to age group 30–34 was 87.6, 88.3, 84.5, and 83.9% for the city, periurban, rural, and remote rural areas respectively. In the most fertile age group (25–29) more than 85% of women in all areas had already used a modern form of contraception.

Methods of contraception used

Women in Chiang Mai Province had used many methods of contraception, including orals, injectables, IUDs, female sterilization, and condoms (Table 13). But the most popular methods were the orals and the injectables.

Although a greater percentage of women had used orals than injectables, it is not possible to assert with certainty that oral contraception was the most popular method, for several reasons: (1) oral contraceptives were available both in the McCormick Hospital's family planning program and through the government's health network, whereas until about 1976 the injectable was available only through the McCormick program; (2) orals had been available to nearly all women since 1967 through the McCormick Hospital's program and before then through chemist shops, but during the study period the injectables were available only for women who had had a previous pregnancy; and (3) few women had been satisfied with only one contraceptive method, and switching from one method to another was common in this population.

It is noteworthy that more rural than urban women chose the injectables, even though urban women had easier access to family planning services. It might be that injectables are more suited to rural life than the orals.

Although the McCormick program had introduced the IUD in 1963 and most people knew about this method, not many of them chose this method for family planning after 1967. This was also the case with other methods, such as condoms, male and female sterilizations, and withdrawal.

Age patterns of first use

Knowing when modern contraception first began to be used is crucial to an understanding of the fertility decline in this population. The questionnaire used in the Chiang Mai Fertility Survey elicited information about when (at what age and birth order) women began using each contraceptive method. Because the patterns of fertility decline are remarkably similar in the periurban, rural, and remote rural areas, for simplicity of presentation the data for those areas are combined. Tables 14 and 15 compare the patterns of first use for orals and the injectable contraceptive (Depo Provera) by women in rural areas and the city of Chiang Mai. Owing to much lower acceptance levels of other contraceptive methods, similar information for them is not available.

Chiang Mai's first family planning program started in 1963 with IUDs (the Margulies Coil). The program began offering the injectable contracep-

Table 14. Women in rural areas who had ever used orals or injectables, by age at interview and year when specified method was first used (%)

Method used and age at interview	Number of women	Year of first use						
		1954-58	1959-63	1964-68	1969-73	1974-78	1979	1954-79
Orals	1,308							
< 20	80	0	0	0	0	70	30	100
20-24	275	0	0	0	12	80	7	100
25-29	308	0	0	2	41	53	3	100
30-34	192	0	3	15	49	32	1	100
35-39	175	1	4	33	37	23	2	100
40-44	148	1	7	35	35	22	1	100
45-49	103	1	10	39	37	12	2	100
50-54	23	13	4	44	30	4	4	100
55+	4	0	25	0	25	50	0	100
Injectables	936							
< 20	26	0	0	0	0	73	27	100
20-24	170	0	0	0	5	80	15	100
25-29	227	0	0	1	36	60	3	100
30-34	144	0	0	10	51	37	1	100
35-39	139	1	3	19	41	35	1	100
40-44	129	1	7	24	36	30	0	100
45-49	82	1	4	19	40	34	1	100
50-54	18	0	6	44	33	17	0	100
55+	1	0	0	0	100	0	0	100

Note: Percentages may not sum to totals because of rounding.

Table 15. Women in Chiang Mai City who had ever used orals or injectables, by age at interview and year when specified method was first used (%)

Method used and age at interview	Number of women	Year of first use						
		1954–58	1959–63	1964–68	1969–73	1974–78	1979–80	1954–80
Orals	361							
<20	14	0	0	0	0	50	50	100
20–24	61	0	0	0	3	80	16	100
25–29	76	0	0	4	36	50	11	100
30–34	58	0	2	14	57	24	3	100
35–39	52	0	4	44	40	10	2	100
40–44	46	0	4	50	30	11	4	100
45–49	35	9	14	46	26	6	0	100
50–54	16	0	13	31	44	13	0	100
55+	3	0	0	100	0	0	0	100
Injectables	172							
<20	1	0	0	0	0	100	0	100
20–24	26	0	0	0	0	61	38	100
25–29	50	0	0	0	30	58	12	100
30–34	32	0	0	16	44	31	9	100
35–39	22	0	5	23	64	9	0	100
40–44	19	0	10	26	47	16	0	100
45–49	14	0	14	43	29	14	0	100
50–54	8	0	0	50	25	25	0	100
55+	0	0	0	0	0	0	0	100

Note: Percentages may not sum to totals because of rounding.

tive in 1965 and the pill in 1967. Orals could be obtained from chemist shops and certain hospitals in Chiang Mai City in the early 1960s, but at high cost, and therefore they were not immediately furnished in the family planning program. It is therefore quite surprising (Table 14) that some rural women reported that they began using orals and injectables as early as the mid-1950s, long before the start of the family planning program.

More than one-third of the women who had begun using orals in 1964–68 were 35 years of age or older at the time of the survey. That means they would have been in the broad age group of 25–44 at the time they first accepted orals. The data also show that in more recent years higher percentages of contraceptive users accepted the pill in the younger reproductive age groups. For example, 67.2% of acceptors who were 30–34 at the time of the survey had already accepted the pill at ages 25–29 or less; this proportion was 96.7% among acceptors 25–29 years old at the time they were interviewed. Nearly the same percentage was found among women in the youngest age group.

The acceptance pattern for the injectable contraceptive was similar to that for the pill. The exception is that a smaller proportion of women accepted the injectable than accepted orals during 1964–68. That proportion increased in 1969-73 and in 1974-78. The McCormick Hospital's introduction of a mobile family planning unit into rural populations in 1969 may have made the injectable more accessible to rural women and thereby increased its acceptance rate in the later periods.

The acceptance pattern for the Chiang Mai City population (Table 15) is similar to that of the rural population, except that a higher proportion of contraceptive acceptors in every age group chose the pill or the injectable in the earlier periods—i.e., 1959–63 and 1964–68. The proportions of acceptors of each method were much the same as in the rural group in 1969-73.

Parity levels at first use

Women of age 40 or more at the time of the survey would have been 25 or more when the first family planning program was established in Chiang Mai City. By age 25 they would have already borne some children. Analysis of the data on acceptance of oral and injectable contraceptives by birth order at time of first acceptance for women in rural areas (Table 16) reveals the following. First, rural women who were 40 years old or more at the time of survey had begun using the pill when they already had many children: 56.1% of women interviewed at ages 40–44 had had five or more births at the time of acceptance. This percentage was even greater among older women. Second, most younger rural women, in contrast, had begun using the pill at much lower parities: 69.8% of those interviewed at ages 30–34

Table 16. Women in rural areas who had ever used orals or injectables, by age at interview and birth order when specified method was first used (%)

Method used and age at interview	Number of women	Birth order						
		0	1	2	3	4	5+	All birth orders
Orals	1,308							
< 20	80	86	14	0	0	0	0	100
20-24	275	59	34	6	0	0	0	100
25-29	308	24	40	23	11	1	2	100
30-34	192	16	27	28	18	8	4	100
35-39	175	0	10	25	25	19	21	100
40-44	148	1	3	12	13	15	56	100
45-49	103	0	4	7	11	13	66	100
50-54	23	0	0	0	4	17	78	100
55+	4	0	0	0	25	0	75	100
Injectables	936							
< 20	26	8	92	0	0	0	0	100
20-24	170	5	83	9	2	1	0	100
25-29	227	1	59	25	13	2	0	100
30-34	144	2	41	33	15	6	4	100
35-39	139	1	12	22	22	19	24	100
40-44	129	0	3	13	15	16	53	100
45-49	82	0	1	10	12	10	67	100
50-54	18	0	0	0	6	0	94	100
55+	1	0	0	0	100	0	0	100

Note: Percentages may not sum to totals because of rounding.

had accepted the pill when they had only two or fewer children, and the proportions of such early acceptors were 86.4 and 99.6% among women interviewed at ages 25-29 and 20-24 respectively. It is noteworthy that well over half (59.3%) of women in the 20-24 age group had started using the pill before their first birth, and in the youngest age group (under 20) the proportion was 86.3%. Third, the acceptance pattern for the injectable contraceptive among rural women was much the same as that for the pill. The policy of the Chiang Mai family planning program did not allow women who had not borne any children to use the injectable. Nevertheless, a few respondents reported having used this method before their first birth.

Most of the younger women started using the injectable immediately after their first birth. Among women interviewed at ages 25-29 the proportion who did so was 58.6%; among women who were only 20-24 and 15-19 at the time of the survey the proportions were 82.9 and 92.0% respectively.

The acceptance pattern among urban women was the same as in the rural population (Table 17). Because of the lower fertility of urban women, however, the majority of older women (age 40 or more) had begun using orals or injectables after having four or more children, instead of five or more as was the case for the rural population.

An interesting finding is that no difference emerged between the urban and rural populations in the pattern of pill and injectable acceptance by women in the most reproductive age group. In both populations more than 85% of young women accepted the pill before their first birth, and more than 80% accepted the injectable immediately after their first child was born.

Sources of modern contraceptives

The study found that women in Chiang Mai accepting contraceptives did so mainly from government health facilities and from the McCormick family planning program. The other main source was the private sector, principally private clinics and chemist shops. The pattern of acceptance depended not only on the type of contraceptive offered but also on the services provided.

As shown in Table 18, most of the nonurban pill acceptors (70% of periurban, 69.6% of rural, and 58.5% of remote rural women) received their supplies from government health outlets such as hospitals, health centers, and health personnel working at home. In Chiang Mai City, however, only 41.6% received their pills from government services.

Although significantly fewer women obtained their pills from the McCormick family planning programs (including its mobile unit, the city clinic, and the hospital) than from governmental outlets, the pattern of acceptance by them is interesting. The McCormick program's clinic and hosp

Table 17. Women in Chiang Mai City who had ever used orals or injectables, by age at interview and birth order when specified method was first used (%)

Method used and age at interview	Number of women	Birth order						
		0	1	2	3	4	5+	All birth orders
Orals	361							
< 20	14	86	14	0	0	0	0	100
20-24	61	57	43	0	0	0	0	100
25-29	76	33	41	25	0	1	0	100
30-34	58	19	41	26	10	3	0	100
35-39	52	0	25	42	15	6	12	100
40-44	46	4	6	17	17	20	35	100
45-49	35	0	9	9	14	23	46	100
50-54	16	0	6	0	13	0	81	100
55 +	3	0	0	0	0	33	67	100
Injectables	172							
< 20	1	0	100	0	0	0	0	100
20-24	26	0	96	4	0	0	0	100
25-29	50	6	52	34	8	0	0	100
30-34	32	0	43	34	22	0	0	100
35-39	22	0	18	41	18	9	14	100
40-44	19	0	11	21	21	10	37	100
45-49	14	0	7	14	0	21	57	100
50-54	8	0	12	0	0	13	75	100

Note: Percentages may not sum to totals because of rounding.

tal, which are situated in the city, naturally attracted acceptors living in the city and the periurban areas (21.0 and 12.3% of all pill acceptors from those respective areas) but few from rural and remote rural areas. The McCormick program's mobile unit, however, was used by 16.3% of orals acceptors in remote rural areas and by 8.2% of orals users in rural areas but by few women in the city or periurban areas as a source of orals.

Other private sources, including chemists and private clinics, played a significant role in the delivery of orals. Their contribution was greatest in the city (37.3%) and lowest in the periurban areas (16.4%).

Most injectable acceptors received their injections through the McCormick family planning program. The proportion of acceptors using the McCormick program was highest in the periurban areas (83.2%) and lowest in the rural areas (68.8%). Reliance on the mobile unit bore a direct relationship with distance from Chiang Mai City, the percentages ranging from 1.4 in Chiang Mai City to 76.7 in remote rural areas.

Facilities for sterilization and for IUD insertion have been available mostly in hospitals or in first-class government health centers. Thus urban residents have had more access to them than the rural populations. Acceptance of these two methods was still very low, even in Chiang Mai City, at the time of the survey.

The simplest contraceptive technique, the condom, is easily available from various sources. The majority of users surveyed bought them from chemist shops.

The data presented in this section have indicated that the availability of various contraceptive methods through Chiang Mai's family planning programs has played a significant role in the widespread acceptance of modern contraceptive methods. Different services have reached different areas. The city clinics have served mainly women from the urban and periurban areas; the mobile family planning unit has served mostly women from rural and remote rural areas; and government health posts scattered more or less evenly in periurban, rural, and remote rural areas have dispersed oral contraceptives to women outside metropolitan Chiang Mai.

Factors in nonacceptance

Despite the popularity of family planning in Chiang Mai, 10% of ever married women in the most reproductive age groups had not become acceptors at the time of the survey. The question therefore arises, why haven't such women used contraception for controlling their fertility? A comparison of the fertility levels of noncontraceptors with those of women who had ever used contraception (Table 19) reveals that in both urban and rural populations noncontraceptors had borne fewer children than contraceptive users in all age groups, a finding that suggests high-fertility women

Table 18. Contraceptive acceptors, by study area, source of supplies, and first method used (%)

Study area and source	First method used						
	Oral	Injectable	IUD	Condom	Sterilization	Others	All methods
CHIANG MAI CITY							
Government							
Health centers or hospitals	42	18	56	15	51	11	34
Health personnel	0	0	6	0	0	1	0
McCormick							
Mobile unit	0	1	0	0	0	0	0
City clinic	16	47	0	5	0	2	15
Hospital	5	26	31	2	48	6	14
Chemists	30	1	0	60	0	11	21
Private clinics	7	7	6	0	1	1	5
Others	1	0	0	15	0	64	9
Unknown	0	0	0	3	0	5	1
All sources	100	100	100	100	100	100	100
Number of acceptors	281	74	16	40	75	66	552
PERIURBAN AREAS							
Government							
Health centers or hospitals	68	14	33	27	51	4	45
Health personnel	0	0	0	0	5	0	0
McCormick							
Mobile unit	3	17	0	0	0	0	6
City clinic	10	51	4	0	3	0	20
Hospital	3	15	45	0	36	4	10
Chemists	12	0	0	36	0	12	8
Private clinics	3	2	16	0	5	0	3
Others	2	0	0	27	0	67	6
Unknown	0	0	1	9	0	13	1
All sources	100	100	100	100	100	100	100
Number of acceptors	563	290	69	11	39	82	1,054

RURAL AREAS							
Government							
Health centers or hospitals	68	25	45	43	75	7	53
Health personnel	2	1	0	0	0	0	1
McCormick							
Mobile unit	8	51	0	0	0	2	16
City clinic	2	17	0	0	0	2	5
Hospital	0	1	5	0	17	0	1
Chemists	17	2	0	57	0	18	13
Private clinics	1	1	40	0	8	2	3
Others	3	3	10	0	0	61	8
Unknown	0	0	0	0	0	7	1
All sources	100	100	100	100	100	100	100
Number of acceptors	329	106	20	7	12	44	518
REMOTE RURAL AREAS							
Government							
Health centers or hospitals	57	8	54	14	75	4	39
Health personnel	1	8	0	0	0	4	3
McCormick							
Mobile unit	16	77	0	0	0	0	27
City clinic	1	2	0	0	0	0	1
Hospital	1	2	27	0	13	0	2
Chemists	19	0	0	71	0	27	16
Private clinics	1	2	18	0	12	4	3
Others	3	2	0	0	0	57	8
Unknown	1	0	0	14	0	4	8
All sources	100	100	100	100	100	100	100
Number of acceptors	147	60	11	7	8	28	261

Notes: Percentages may not sum to totals because of rounding. The McCormick Hospital's mobile unit covers 38 work points in rural areas of the province every three months.

Table 19. Mean number of children ever born to contraceptive users and nonusers in Chiang Mai City and rural areas, by age

Age at interview	Mean number of children				% of ever married women			
	Chiang Mai City		All rural areas		Chiang Mai City		All rural areas	
	Users	Nonusers	Users	Nonusers	Users	Nonusers	Users	Nonusers
15-19	0.44	0.00	0.54	0.32	76	24	76	24
20-24	1.17	0.40	1.01	0.81	94	6	85	15
25-29	1.73	0.38	1.85	0.80	85	15	91	10
30-34	2.18	0.60	2.49	1.15	89	11	88	12
35-39	3.30	1.13	3.71	2.45	90	10	82	18
40-44	4.14	2.30	4.77	3.71	76	24	70	30
45-49	4.88	4.24	5.87	5.09	59	41	50	50
50-54	5.47	4.61	6.87	5.95	43	57	19	81
55+	6.26	4.77	6.63	5.96	19	84	7	93

Note: Some percentages of ever married women in this table are higher than those in Table 13 because the analysis here includes women who used abortion to control their fertility, whereas such women are omitted from the analysis in Table 13.

seek modern contraception early in their reproductive lives. The data also show that fertility was substantially lower among nonusers than among users in the high-fertility age groups of 15–34, although low proportions of those women, especially those 20–34, had not used contraception. These findings suggest that low fertility occurred naturally for these women. The higher proportion of nonusers in the age group 15–19, however, may be explained by the fact that most of them had not yet conceived. This was clearly the case among young urban nonusers. It seems reasonable, therefore, to conclude that those who did not practice contraception during the 1970s were mostly women of low fecundity.

FACTORS IN CHIANG MAI'S RAPID FERTILITY DECLINE

The fertility decline in Chiang Mai has resulted mainly from the desire for small families, itself the consequence of important socioeconomic changes that began long before the 1960s. These can be summarized as follows. The most important change was the limitation of available land. Another was rapid decline in child mortality after World War II, which brought about more and more pressure on couples to have fewer children. The government's development schemes in the 1960s did not create new jobs and therefore did not help unemployed people. Small family size thus became a new value for survival. Finally, contraceptive services made available through private and government family planning programs since the 1960s helped couples achieve desired small family size.

Evidence of population pressure on the land comes from families who have no land for cultivation. At the time of the Chiang Mai Fertility Survey in 1979 only 50.4% of households in the periurban areas, 57.6% of those in the rural areas, and 55.6% in the remote rural areas worked on their own land. Others had to rent all or part of the farm land they used to earn their livelihood.

Dr. Boonchom Areewongse, director of the McCormick family planning program, who was 72 years of age in 1985 and a native of Chiang Mai, described to me how, in the 1930s, people moved from Chiang Mai Province to nearby Chiang Rai Province in search of land. In the 1960s there was again an exodus of people from Chiang Mai City and the periurban areas to rural and the remote rural areas of the province for the purpose of acquiring new land.

Pressures on land have also been exacerbated by the inheritance system. Land is divided among the children of a family after their parents die. Without new land becoming available, the consequence of this system is that, after a few generations, the individual land holdings become too small to support a family.

The continuing mortality decline put more pressure on the land tenure system. After World War II infant and child mortality fell rapidly, owing to the eradication or control of malaria, smallpox, cholera, and tuberculosis; and more children survived to lay claim to their parents' land. The vital registration system for Chiang Mai Province recorded crude death rates of 16.2 deaths per 1,000 persons in 1947, 10.2 in 1963, and 6.2 in 1978. The decline of infant mortality was also remarkable: from 130.8 deaths per 1,000 live births in 1947 to 68.7 in 1963 and 20.8 in 1978. Although the vital events recorded by the vital registration system are well known to be underreported, the estimates point unmistakably to a mortality decline in this population.

Job opportunities for the unemployed have been limited in the agricultural sector. Even in the early 1960s, the employment opportunities for people without higher education were slim, and in recent years they have worsened. It is now common for there to be from ten to 100 applicants for any job opening. The plight of young women from Chiang Mai and other northern provinces who seek demeaning jobs as bar girls in Bangkok and other big cities is well known.

During the survey interviews many of the elderly women described the hardship that having too many children had caused. Some of them had resorted to induced abortions out of desperation. Many said that if modern contraceptives had been available in their day, they certainly would have had smaller families.

The desire for improved living levels—e.g., higher education for their children and for household conveniences—has increased the attractiveness of small family size. In Chiang Mai Province, as in other parts of Thailand, only people with higher education are able to find jobs in the government sector. But until the 1960s centers of higher education existed only in Bangkok, the capital city. A few other cities had schools at the preuniversity level, but opportunities for higher education were not available to people in rural areas, who were generally unable to afford the expense.

Not until the 1970s were people in Chiang Mai Province exposed to such forms of modernization as cars, motorcycles, and television. This came after the substantial decline in fertility of the 1960s. The attractions of consumer goods may have served as further motivation to limit family size. Buying a motorcycle, for example, instead of having another child could help a couple to earn their living.

Modern contraceptives, made available first by the McCormick family planning program in 1963 and later by the government programs, helped young couples to achieve the small families they desired, as well as helping older couples to limit their family size to levels already achieved. Fertility, therefore, began falling precipitously in the 1960s and continued to decline thereafter, to reach a level lower than replacement.

One reason for the widespread acceptance of modern contraception in so short a period of time may have been people's trust in the McCormick program. For almost a decade before the family planning was started the people of Chiang Mai had received health services from the McCormick Hospital. The contraceptive services offered by McCormick found ready acceptance.

DISCUSSION

Findings from the Chiang Mai Fertility Survey support findings from previous studies (Pardthaisong 1978; Shevasunt et al. 1978) and provide firm evidence of the impressive impact of family planning programs on family size in Chiang Mai Province, where fertility fell from a high level to below the replacement level in less than twenty years. The most striking finding was the rapidity of the fertility decline in rural areas. There it started in the late 1960s at a level higher than that of the Chiang Mai urban population. By the late 1970s rural fertility had reached such a low level that it nearly equaled the rate prevailing in Chiang Mai City.

Even today, differences between the urban and rural populations in "modernity"—e.g., educational level, electrification, water supply, home appliances, medical services, occupation, and general socioeconomic status—are dramatic. Modernity has been demonstrated to be the main cause of fertility differentials in many populations elsewhere. It is therefore amazing that, in less than twenty years since the introduction of an intensive family planning program, the fertility differentials have almost disappeared between Chiang Mai Province's rural and urban populations. The survey data also indicate an identical fertility decline among women of all sectors, regardless of their educational levels and spouses' occupations. These findings strongly suggest that family planning services are one of the best possible means of slowing population growth to a desired low level.

As already noted, Chiang Mai's rapid fertility decline between 1960 and 1970 did not coincide with a change in the marriage pattern. Singulate mean age at marriage did increase in the 1970s, however, especially in Chiang Mai City, where modern contraceptives had been in common use. The survey data suggest that the marriage age of women did not start to rise until after contraceptives had been available for many years. Thus, this study provides a different perspective from what has been shown in other societies, namely that in Chiang Mai marital fertility fell before age at marriage rose. Moreover, marital stability was much the same throughout the study period of 1960–80.

The rapid fall of fertility in Chiang Mai involves not only a change in the age structure of the population but also a change in socioeconomic patterns, for example in the primary school system. At present many primary schools register fewer than sixty pupils in grades 1 through 6, and others have been forced to close because of an insufficient number of pupils. Middle-class families have recently experienced a scarcity of servants, which is attributable partly to the expansion of the job market and partly to the reduction in the number of children born in Chiang Mai starting in the 1960s. The introduction of family planning services in Chiang Mai Province has also enhanced couples' reproductive control and thus improved their human rights situation.

The fertility decline in Chiang Mai Province has been more rapid than in other parts of Thailand because of the early introduction of family planning services and the intensiveness of the family planning programs there. Nevertheless, other parts of Thailand began to experience fertility declines in the 1960s (Pardthaisong 1980), and these became more rapid in the 1970s (Thailand, Office of the Prime Minister 1977). Diminishing regional differentials in Thailand's fertility levels have been documented by Kamnuansilpa et al. (1982).

Comparison of the fertility decline in Chiang Mai with that of Thailand as a whole raises some interesting questions. Will the fertility differentials among the regions of Thailand disappear in the near future? Will the fertility of the urban populations be the same as the rural populations', as is now the case in Chiang Mai? Is it possible for Thailand as a whole to attain the same low levels of fertility now seen in Chiang Mai?

It seems to me that if family planning services like those in Chiang Mai become available throughout Thailand, a further reduction in fertility is possible at the national level. But differences among regions such as culture, land-tenure patterns, and geography make an equally low fertility level in all parts of the Kingdom unlikely. For example, the scarcity of water in the northeast necessitates more intensive use of labor than in the north; typically, villagers must carry water in buckets from sources more than a kilometer away, whereas in rural Chiang Mai the source of water is almost at one's doorstep. It follows that a child's contribution to the labor force is more important for the villagers in the northeast. This need for children's labor apparently affects the fertility level of the region. Such differences in the lives of the people in the north and the northeast go beyond what family planning can do and make it difficult to believe that the two populations will ever have equally low fertility levels.

REFERENCES

Brass, William, and Hoda Rashad

1980 Exploratory demographic analysis of imperfect maternity histories to determine levels and trends of fertility. Paper presented at Seminar on the Analysis of Maternity Histories, International Union for the Scientific Study of Population, London, 9-11 April.

Chamratrithirong, Aphichat

1976 Fertility, nuptiality and migration in Thailand, 1970 Census: The multiphasic response theory. Unpublished Ph.D. dissertation, Department of Sociology, Brown University, Providence, Rhode Island.

Chiang Mai University and University of Chicago

1979 *Fertility and Family Planning in Rural Northern Thailand.* Chicago: University of Chicago.

Kamnuansilpa, Peerasit, Apichat Chamratrithirong, and John Knodel

1982 *Thailand's Continuing Reproductive Revolution: An Update.* Research Report 82-19. Ann Arbor: Population Studies Center, University of Michigan.

McDaniel, Edwin B., and Tieng Pardthaisong

1973 *Evaluating the Effectiveness of a Two-Year Family Planning Action Program at Ban Pong Village in Northern Thailand.* Bangkok: Institute of Population Studies, Chulalongkorn University.

Pardthaisong, Tieng

1980 *Family Planning Programmes and the Decline of Fertility in the 71 Provinces of Thailand.* Monograph No. 13. Bangkok: Thai Khadi Research Institute.

1978 *The Recent Fertility Decline in the Chiang Mai Area of Thailand.* Papers of the East-West Population Institute, No. 47. Honolulu: East-West Center.

Rele, J.R.

1976 *Fertility Analysis Through Extension of Stable Population Concepts.* Westport, CN: Greenwood Press. (First published as Population Monograph Series, No. 2. Berkeley: University of California, 1967.)

Shevasunt, Somphong, Dennis P. Hogan, and Kwanchai Thaitong

1978 Fertility and family planning in rural northern Thailand. *Studies in Family Planning* 9(8):212-21.

Thailand, Office of the Prime Minister, National Statistical Office

1977 *The Report of the Survey of Population Change 1974–1975.* Bangkok.

Trussell, James

1980 Illustrative analysis: Age at first marriage in Sri Lanka and Thailand. *World Fertility Survey: Scientific Report No. 13.* London: World Fertility Survey.

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The population of Burma: An analysis of the 1973 Census

M. Ismael Khin Maung

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I am grateful to Dr. Richard B. Sturgis of Westinghouse Health Systems for kindly making data from the 1973 Census available to me.

ABSTRACT Drawing primarily on data from the 1973 Census, this paper describes recent trends in Burma's population, including population growth and distribution, the age structure and ratio of males to females, marriage practices and trends, composition of ethnic groups, literacy and educational attainment, labor force characteristics, and recent fertility and mortality. For contextual background, it also describes historical, geographic, and recent political conditions. Preliminary data from the 1983 Census are included where appropriate.

The unprecedented spurt during the 1960s in Burma's population growth rate (which was still modest by Asian standards) appears to have been due to both a drop in the death rate and a rise in the birth rate. Insufficient data prevent confirmation of this hypothesis, however. The observed age distribution of 1973 suggests that the population of Burma has entered the early phase of demographic evolution in which death rates decline but birth rates remain high. Fertility and mortality levels are still imprecisely known. Future trends in vital rates are likely to depend not only on the entry of large cohorts into prime reproductive ages, but also on further improvements in health and longevity among the urban and rural populations and on continued nodding recognition by the government of the problem of rapid population growth. The large-scale emigration of foreign residents (mainly Indians and Chinese) in recent years has caused the population to become preponderantly indigenous but has also created a shortage of professional and administrative personnel and has not solved the problem of interethnic tensions.

Dramatic changes in political and economic conditions have taken place in Burma since independence and the bloodless military coup of 1962. The consequences of these changes, particularly those wrought by the military regime, ought to be reflected in the structure and dynamics of Burma's population, and an analysis of aggregate demographic data from the 1973 Census provides an opportunity to assess these consequences. Needed as a source of voter lists for Hluttaw (Parliament) elections, the 1973 Census was the first country-wide census since World War II and yielded valuable demographic, social, and economic data.

Although a wealth of demographic data of reasonably good quality has existed for Burma for more than a century, research on Burmese demography has been limited, even by Asian standards. Three factors are associated with the sparsity of demographic literature on Burma. First has been the lack of trained demographers and social scientists of Burmese origin. Second was the government's policy of self-imposed isolation, adopted in 1962, which led it to restrict research in Burma by foreign scholars. The third factor was the limited circulation and availability outside Burma of published data, especially data from the postwar years. As a consequence, with the exception of a small collection of studies--which, incidentally, are in disarray—Burma is virtually a *terra incognita* to students of international demography.

BURMA'S POSTWAR HISTORY

Strategically located in the Southeast Asian peninsula, Burma is slightly smaller than the state of Texas and borders the densely populated countries of Bangladesh and India on the west, China on the north, Thailand and Laos on the east, and the Bay of Bengal on the south and southwest (see Map). A mountainous country with rugged geographical boundaries, Burma has had little contact with the rest of the world throughout most of its history. With the advent of British colonial rule in 1825, however, the country was opened to international trade. After more than a century of colonialism, Burma regained her independence on 4 January 1947 and opted to remain outside the British commonwealth as a constitutional republic. U Nu was its first prime minister. His regime was greatly troubled by insurgencies and communist rebellions, and it ended in 1962 with a bloodless military coup led by General Ne Win. Soon after coming to power the military regime produced three related documents articulating its ideology, philosophy, and plan of action for a socialist transformation of the country. The Burma Socialist Program Party, known as the Lazin Party in Burmese, was institutionalized as the only political party. The trilogy of documents represented an amalgam of Marxist-Leninist ideas and Burmese-Buddhist values, providing an ideological basis for transforming Burma into a socialist state (see Steinberg 1981).

What were the effects of this radical political change on population policy and programs? The Revolutionary Government regards Burma as underpopulated and initially banned family planning and birth control altogether. Today abortion is still illegal except in cases in which a pregnant woman's health is in danger. Sterilization is also illegal but may be performed with proper authorization. Although no official statement about population policy has been issued, the government's attitude toward fertility is one of noninterventionism.[1] During the early years of the administration, it explicitly favored population growth, believing the country to be

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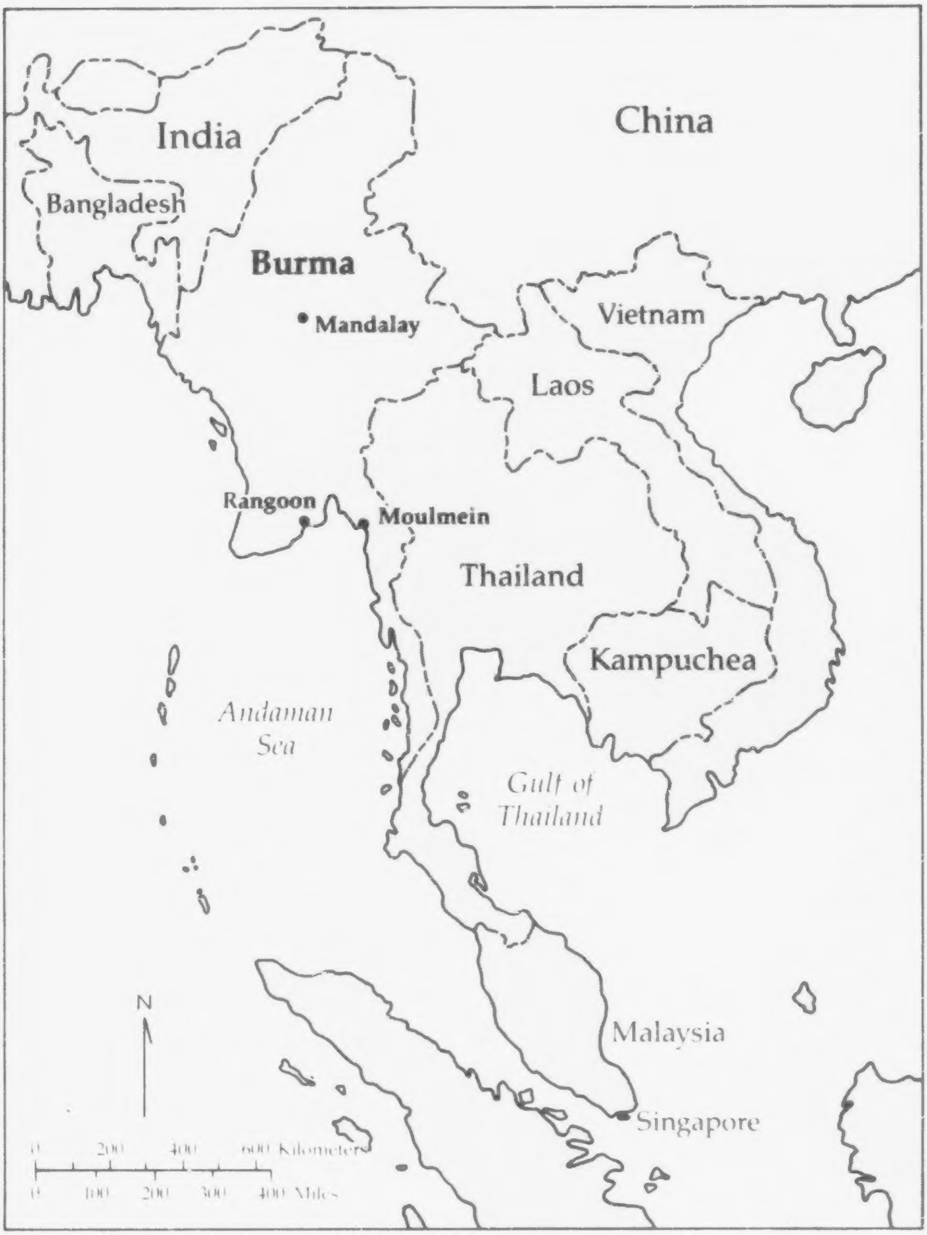
[1] Contraceptives are available only through hospitals and maternal and child health (MCH) centers. Nevertheless, the government appears to be increasingly cognizant of the pressure of rapid populaton growth on its limited health, education, and welfare services. It seems that "the need for family planning is being accepted cautiously. Family health counselling will be introduced in the next four years at some hospitals and MCH centres. Mothers will be encouraged to space births; contraceptives, which are otherwise not freely available, will be distributed" (ESCAP 1984:2).


India
China
Bangladesh
Burma
Mandalay
Vietnam
Laos
Rangoon
Moulmein
Thailand
Kampuchea
Andaman Sea
Gulf of Thailand
Malaysia
Singapore
N
0 200 400 600 Kilometers
0 100 200 300 400 Miles

Map. Burma and adjacent countries

underpopulated and wishing to assure an abundance of human resources for socialist reconstruction efforts.

Rules restricting immigration were instituted after independence, and in 1962 immigration was completely stopped except under the government's sponsorship. Emigration, however, was allowed. The nationalization of private enterprise and of wholesale and retail trade, most of which had been in alien hands, caused a large exodus of unassimilated foreign residents from the country. According to one estimate, at least 200,000 persons, most of whom were Indians and Pakistanis, left Burma during the first few years of the new government (Steinberg 1981:35).

POPULATION GROWTH

The 1973 Census recorded a total population of 28,921,226 inhabitants, including an estimated 836,713 persons in disturbed areas who were not directly enumerated. With this total population Burma ranked as the fifth largest nation in Southeast Asia in 1973, after Indonesia (127.6 million), Vietnam (42.7 million), the Philippines (42.0 million), and Thailand (41.0 million). Preliminary data from the 1983 Census indicate a total population of 35.3 million. According to the official projection, by the year 2001 Burma will have a population exceeding 63.22 million (Union of Burma 1963:16).

Burma's prehistory is obscure, but according to some historians there were inhabitants in the area of today's modern Burma during the stone age (Harvey 1947:1; Hall 1950:7). It has been conjectured that a preagricultural population numbering at most 30,000 inhabited the area until the second millenium B.C. (McEvedy and Jones 1978). Much later came a great migratory infiltration by three southern Mongolian groups—the Mon-Khmer, the Tibeto-Burman, and the Tai Chinese—in that order. The ancestry of the indigenous Burmese has been traced to those three groups. The Mon (or Talaing) of the Mon-Khmer group settled in the south, coming first under Indian influence and later receiving Buddhism and Sanskrit culture, which eventually spread to the rest of the country. In the north were the Burman, Chin, Kachin, and other groups of the Tibeto-Burman family.

Records of Burmese history, considered by historians to be authentic, date from 1044 A.D., the first year of the Pagan Empire founded by Anawratha (1044-77). Burmese cultural history began during that period and developed rapidly under the influence of three civilizations—the Pyu, the Mon, and the Arakanese—which had flourished before the establishment of the Pagan Empire. Most of Burma's precolonial history consisted of wars between the Burmese and the Talaing in the south and the Shan in the north. The strains of those historic conflicts between the ethnic groups have survived to the present time.

The eight hundred years of conquests and defeats—of the rise and fall of great dynastic empires founded by the dominant Burman ethnic group, who at various times attempted to unify the country—can be conveniently divided into three episodic dynasties: the Pagan (1044–1287), the Toungoo (1531–1752), and the Konbaung (1752–1885). It is not known when the first counts of population at local or regional levels were made. The earliest known dynastic documents containing survey-type data are the Burmese *sit-tans,* or records of inquests (Trager and Koening 1979). The sit-tans were sporadic attempts of the monarchs to gain information about local and regional conditions, probably for purposes of effective administration, taxation, and military or labor levies. They constitute a usable data source for a study of the historical demography of precolonial Burma.

During the colonial period estimates of Burma's population were made by Britons who visited Burma on diplomatic assignments (Kaul 1930). For example, Henry Burney, a British resident at the court of Ava between 1830 and 1837, used the sit-tans of villages and towns to estimate the population of the Burmese empire in 1783 and 1826 as 4,209,240 and 4,230,558 respectively (Burney 1842). The negligible population growth represented by his figures over the four decades is plausible because the Burmese in those days probably lived under conditions of high mortality, exacerbated by the frequent internecine warfare among kingdoms and tribes. In addition to being static, the Burmese population was rather small relative to its vast and rich agricultural land and given the virtual absence of major famines and other natural catastrophies. The reasons for the apparently small population during colonial times merit investigation.

The introduction of censuses by the British makes it possible to trace the history of population growth during the colonial period with some assurance. The first modern census was taken in 1872 and followed by a second in 1881. Thereafter decennial censuses were taken regularly until 1941. A census was conducted in 1941, but owing to the spread of World War II to Asia the returns were lost. The only surviving data from that census are the provisional district totals. The insurgencies following independence prevented the resumption of decennial censuses after the war, and therefore no countrywide census was taken again until 1973.

The 1872 and 1881 censuses covered only lower Burma. The 1891 Census included upper Burma but did not cover the entire country. In 1901 the enumeration included four-fifths of Burma, the remaining fifth being inaccessible and sparsely populated frontier areas. Because of the differences in area covered, growth rates based only on the censuses prior to 1901 would be exaggerated. Extensive adjustments are needed for the 1872, 1881, and 1891 censuses to make them comparable to subsequent censuses. In the present analysis the growth trend is measured from the 1901 Census, thus avoiding the problems of adjustment for incomplete data.

Table 1. Population growth: Burma, 1901-83

Census date or year of estimate	Population (in millions)	Area covered (km²)	Annual growth rate
15 August 1872[a]	2.747	229,645	na
17 February 1881[a]	3.737	225,900	na
26 February 1891[a]	7.722	444,004	na
1 March 1901[a]	10.491	585,881	na
10 March 1911[a]	12.115	597,873	1.4
18 March 1921[a]	13.212	605,301	0.9
26 February 1931[a]	14.667	604,744	1.1
2 February 1941[b]	16.824	677,951	1.4
1953	19.101[c]	na	1.1
1963	22.541[c]	na	2.1
31 March 1973[d]	28.921	676,581	2.0
1 April 1983[e]	35.306	676,581	2.0

Sources: a. Censuses of India (1872-1931), Burma volumes. See Duncan (1875); Copelston (1882); Eales (1892); Lowis (1902); Webb (1912); Grantham (1923); Bennison (1933).

b. United Nations (1967:107).

c. Estimate from United Nations (1964:152).

d. Union of Burma (1973:viii).

e. Union of Burma (1983:4).

na—not applicable because of incomparability of data.

Burma's population grew rather slowly during the first half of the twentieth century, the growth rate remaining almost constant at slightly above 1 percent until World War II (Table 1). There were no widespread calamities during those decades except during the decade of 1911-21, when the influenza epidemic beginning in 1918 resulted in an absolute increase of only about 1.1 million persons. According to the authorities, the epidemic reduced the population growth rate in the area of vital registration to 9.6 percent from an estimated 12.45 percent that would have been registered during that decade had the epidemic not occurred. "Influenza thus accounts for a reduction by about 2.85 percent of the rate of increase for the decade in the registration area" (Grantham 1921:34). Growth rates of 2 percent, which are modest in modern times, were not reached until the 1960s. During the eighty-two years between 1901 and 1983 Burma's population more than tripled, at an average annual growth rate of slightly more than 1 percent. The largest absolute increment was 6.4 million observed in the decade of 1973-83. This was more than the increase experienced during the preceding two decades and was unprecedented in Burma's history, but it can hardly be considered phenomenal when compared with the experiences of other parts of Southeast Asia.

Perhaps the most remarkable aspect of Burma's population growth is that over half of the increase during the eighty-two-year period occurred only during the last twenty years. The accelerated growth in Burma, as in other parts of Asia, was brought about by a rapid decline in the death rate during the postwar years and possibly was combined with an increase in the birth rate. In the section on age structure, I offer some speculations about the possible recent increase in fertility.

Neither the growth rates nor the absolute increases in the Burmese population are large enough to cause alarm at present. But further acceleration in the growth rate would bring the population to the officially projected level of 63.2 million sooner than the year 2001 (Union of Burma 1963).

POPULATION DENSITY

Burma occupies an area of approximately 676,581 square kilometers (261,228 square miles). In 1973 the average population density was 42.7 persons per square kilometer, and by the 1983 Census it was 52.2. The present density level is more than twice the prewar level of 24.8 recorded in 1941 (provisional census total), when the area enumerated was larger. Yet when compared with other countries of Southeast Asia, Burma appears sparsely populated. A considerable portion of its land area consists of mountains and tropical forests that inhibit any large-scale human settlement with the existing level of technology.

The uneveness in the population's geographic distribution can be appreciated by comparing the density figures for the divisions and states (Table 2). Politically Burma is divided into seven divisions and seven states, and each in turn is divided into townships for administrative purposes. Each township is subdivided into wards and village tracts. This system was created by the Revolutionary Government, which became effective in 1972 and abolished the old Britisih administrative district as a political unit. Geographically, the states are largely mountainous regions whereas the divisions occupy the fertile lowlands of the river basins and the delta plain. The hills of Burma are the ecological niche of the indigenous minorities: Shan, Karen, Kayah, Chin, Kachin, Mon, Arakanese, and others; the ethnic Burman group is concentrated in the populous delta and the Irrawady River basin, which are the cultural hub of the country.

Table 2 reveals that the most thinly populated divisions and states in 1973 were most of the states and also the divisions of Sagaing and Tenasserim, containing vast territories of mountains and tropical forests where crude density ranged between 8.3 and 33 persons per square kilometer, well below the national level of 42.7. In contrast, the thickly populated divisions and states were all in the fertile lowlands of the river basins and the coastal strips, where density ranged between 46.6 and 313.5. The thickly populated

Table 2. Population density, by state and division: Burma, 1973

State/division	Population[a]	Area (km²)[b]	Persons per km²
Kachin State	737,333	89,042	8.3
Chin State	323,295	36,019	9.0
Shan State	3,179,546	155,801	20.4
Karen State	858,429	30,383	28.3
Kayah State	126,574	11,733	10.8
Mon State	1,314,224	12,297	106.9
Arakan State	1,712,838	36,778	46.6
Sagaing Division	3,119,054	94,626	33.0
Tenasserim Division	719,441	43,344	16.6
Pegu Division	3,179,604	39,404	80.7
Magwe Division	2,634,757	44,820	58.8
Mandalay Division	3,668,493	37,024	99.1
Rangoon Division	3,188,783	10,171	313.5
Irrawady Division	4,156,673	35,139	118.3
Union total	28,921,226	676,581	42.7

Source: Union of Burma (1973: tables 1 and 2).

a. Total population of states and divisions includes estimated populations of omitted areas (Union of Burma 1973: table 1).

b. Total area of states and divisions from Htain Lin (1976:42) and converted to square kilometers.

territories, with an average density of 116 persons per square kilometer, accounted for only about one-fifth of the total land area but more than half of the total population. The sparsely populated states, with an average density of only 16 persons per square kilometer, occupied nearly half of the total land area but accounted for less than one-fifth of the total population.

URBAN-RURAL DISTRIBUTION

Burma's level of urbanization is low. Less than a quarter of the population lived in settlements defined as urban in 1973, and there are few large cities. Only the capital city, Rangoon, had a population over one million. The 1973 Census did not tabulate the population of towns to determine the size-of-place distribution, but in all likelihood the degree of urban primacy has not diminished much since 1953 (see, e.g., Vajda 1960). During colonial times the large urban centers had high concentrations of foreign residents, especially of Indians and Chinese. For example, in 1931 more than 50 percent of Rangoon's population was Indian. Since independence, however, the major cities have gradually shed their alien character and today are centers of nationalism and national culture.

The 1973 Census, which covered the entire urban population residing in 283 towns of varying sizes, revealed that nearly one-fourth of the total population was urban. Preliminary figures from the 1983 Census showed an absolute gain in the urban population of 1.64 million persons, but the proportion urban (23.95 percent) was virtually the same as in 1973. The percentage increase in urban population was slightly lower than the perecentage increase in the total population (24.0 percent versus 25.7 percent), suggesting that natural increase was the chief source of urban growth during the decade and the amount of rural-urban migration was therefore quite small. International migration, which had been an important source of urban growth during colonial times, had only a negligible effect on urban growth during this period. Despite the definitional and data problems encountered in international comparisons of urbanization level, Burma can be described as one of the more urbanized nations in Southeast Asia in 1973. The most urbanized were the Philippines (31.8 percent urban in 1974) and Malaysia (26.9 percent in 1973); the least urbanized were Thailand (13.2 percent), Laos (14.7 percent), and Indonesia (17.4 percent).

AGE STRUCTURE

Deficiencies are probably present in the age data of both the prewar and the postwar censuses. Although the 1973 age data are alleged to be superior to those of previous censuses (Htain Lin 1976:41), some inaccuracy is inevitable, especially in the data from rural areas. Underreporting of infants and misstatement of age (particularly preference for the digits 0 and 5) have been shown to be major causes of defective age data (Sundrum 1957; Grantham 1921; Bennison 1931). Contrary to the Burmese habit of reckoning age according to one's age on the nearest birthday, the 1973 Census asked respondents to state their age in completed number of years. It also secured information on the date of birth. For the first time in Burmese census history, the census tabulated the age-sex distribution in single years.

The age distribution by three broad age groups for the census years 1901-73 is shown in Table 3. The data reveal two interesting changes in the Burmese age structure that are likely to have important demographic, social, and economic consequences in the future. First, in 1973 the age structure was distinctively younger than at any previous time, there being a marked increase in the proportion of the population under age 15 and a corresponding shrinkage in the 15-19 age group. Second, the age structure remained stable up through 1931, with the proportion of children varying between 36 and 38 percent. In sharp contrast to the prewar years, in 1973 the proportion of children had risen to over 40 percent, making the age structure (when viewed as an age pyramid) bottom-heavy.

Table 3. Percentage distribution of the population, by broad age group: Burma, 1901-73

Age group	1901	1911	1921	1931	1941	1953	1954	1973
0-14	37.2	37.8	36.3	37.4	u	33.9	37.1	41.5
15-19	56.7	57.2	57.9	57.5	u	62.1	58.4	52.5
60+	6.1	6.0	5.8	5.1	u	4.0	4.5	6.0

Sources: United Nations (1959b:47, table c); Union of Burma (1973:x).

u—data unavailable.

The rise in the proportion of young people is doubtless a result of gains in infant and early childhood survivorship due to improvements in such things as sanitation, public health, and medical care. But part of the increase may be attributed to an increase in fertility during the post-1962 period. Two reasons may be offered for the higher birth rate during this period. First, the Revolutionary Government's adoption of a pronatalist population policy and the consequent banning of family planning clinics may have resulted in a transformation of reproductive behavior. Second, improved health and survivorship of females of reproductive ages during this period may have produced "higher levels of fertility by reducing sterility, subfecundity, and pregnancy wastage and by extending the average lifetime of a marriage" (Preston 1975:193). The combined effect of these factors was to destabilize the age structure and usher in a new era of demographic growth. The 1973 age structure fits Coale's characterization of a "transitory age distribution" (Coale 1956:101).

The attenuation in the proportion of the population in the productive and reproductive ages resulted from the increase in the number of young dependents coupled with a decrease in the adult population, which was possibly due to the emigration of foreigners from the country after the coup. The proportionate share of elderly people in the population, however, remained fairly stable over the period.

As expected, the 1973 age-sex distribution by five-year age groups (Table 4) had large concentrations of the population in the young age groups and proportions declining rapidly with age, a pattern characteristic of a population in an early stage of demographic transition. The sharp tapering of percentages suggests a low expectation of life. The median age for the total population was 18.1 years, 17.9 for males and 18.3 for females. Two-thirds of the population was under 30 years of age. The somewhat low proportion in age groups 25-34 was due to the reduced cohorts born during World War II and the Japanese Occupation, which by 1973 had advanced to those ages. The restoration of law and order, the reunion of families, and the formation of new families after demobilization probably led to an

Table 4. Percentage distribution of the population, by age and sex: Burma, 1973

Age	Total	Male	Female	Sex ratio
<1	2.6	2.6	2.5	100.9
1-4	12.5	12.6	12.4	101.0
5-9	14.0	14.2	13.8	101.1
10-14	12.4	12.6	12.2	102.5
15-19	10.4	10.3	10.5	97.0
20-24	8.2	8.1	8.3	96.8
25-29	6.4	6.3	6.5	97.1
30-34	5.9	5.9	6.0	96.0
35-39	5.7	5.7	5.7	99.3
40-44	5.2	5.2	5.2	98.8
45-49	4.1	4.2	4.1	100.1
50-54	3.7	3.7	3.7	98.3
55-59	2.8	2.8	2.8	98.1
60-64	2.4	2.3	2.4	95.7
65+	3.7	3.5	3.9	89.1
All ages	100.0	100.0	100.0	98.9
Number	28,084,513	13,962,774	14,121,739	
Median age	18.1	17.9	18.3	

Source: Union of Burma (1973:12-13).

increase in births during the postwar years. The abnormalities observed in the prewar age-sex structures are no longer seen in the recent age distribution.

If this age structure persists in the future, the proportion of young people will remain above the 40 percent level and the imbalance in the proportions of dependents and productive persons will continue. From an economic standpoint this implies a mismatch of income generators and income users, which in turn will mean reduced savings and investments in such things as education, housing, health, social welfare, and other social needs. All other things being equal, the continued high proportion of young people will vitiate economic development and lower the already low level of living.

SEX COMPOSITION

The growth of economic opportunities concomitant with the colonial development of the delta frontier and the opening of Burma to foreign trade in the mid-nineteenth century stimulated a large influx of Indians and Chinese, who came by sea and over land. These developments resulted in the transformation of the traditional, community type of society into a plural society made up of indigenous and foreign populations. The latter included the Europeans, Indians, and Chinese, most of whom were unassimilated and transient men. An examination of the historical pattern of sex composition in Burma reveals the demographic impact of colonialism. In studying the changes in Burma's sex composition over time, it is necessary to take the effects of colonialism and immigration into account.

From 1901 to 1931 the sex ratio (number of males per 100 females) for the total population was consistently masculine (Table 5). In 1973 and 1983, however, it was feminine and resembled closely the prewar ratio for the indigenous population. The decline of the sex ratio must have commenced after World War II and independence as a result of reduced immigration into the country. In 1973 the sex ratio of the foreign population was 115.3, which, although high, was considerably lower than the prewar figures, reflecting the settlement and assimilation of those who did not emigrate. The sex ratio of the indigenous population, on the other hand, has been feminine and virtually constant since 1901 at around 98.

Sex ratios for 1973 generally declined with age, reaching a minimum value of 89.1 at ages 65 and over (Table 4). The overall sex ratio for 1973 was 98.9. The excess of females is usually attributed to their longer life expectancy. But in Burma a contributing factor might be that females are more completely enumerated because of the greater freedom and status of women in Burma as compared with other countries in the region. This seems to be especially the case at ages 15-34, in which the excess of females is most noticeable.

The lower than expected ratio of males to females among infants under one year of age[2] might be due to higher male than female infant mortality, whereas the somewhat high sex ratio recorded at ages 10-14 could be explained by inaccurate age reporting of girls after puberty is reached. But it is also possible that declines in childhood mortality in recent years have affected proportionately more boys than girls. In 1973, for example, 42 percent of males but only 40.9 percent of females were under age 15. In contrast, the sex ratios in the age groups between 15 and 34 are each lower than the total despite the higher risk of mortality faced by females in childbearing. The deficit of females at ages 35-60 is also puzzling.

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[2] The sex ratio at birth in human populations has been found to vary at around 105 males to every 100 females. The larger number of males born and the variability in sex ratios at birth among different populations are attributed to genetic, biological, and socioeconomic factors, but the relative effects of each are not known precisely. Empirical studies have reported low sex ratios at birth for populations with low standards of living, high proportions of stillbirths, and higher average ages of mothers (United Nations 1973:270).

Table 5. Trend in sex ratios: Burma, 1901-83

Census year	Population		
	Total	Indigenous	Foreign
1901	103.8	97.8	201.2
1911	104.2	97.7	215.1
1921	104.6	98.0	193.0
1931[a]	104.3	97.0	209.2
1973[b]	98.9	98.5	115.3
1983[c]	98.4	u	u

Sources: a. Censuses of India (1901, 1911, 1921, 1931). See Lowis (1902); Webb (1912); Grantham (1923); Bennison (1933).

b. Union of Burma (1973:ix).

c. Union of Burma (1983:3).

u—data unavailable.

Whether this is a mere statistical anomaly or a real deviation due to some social or environmental factors is difficult to ascertain.

The urban population in 1973 had a nearly balanced sex ratio (100.4) whereas the rural population had a low ratio (98.4). A low rural sex ratio suggests migration of males from rural to urban areas. One reason may be the government's low agricultural procurement prices, which make farming and farm work less lucrative and thus encourage migration to towns (Steinberg 1981:107).

MARITAL STATUS

Marriage is a strictly secular institution in Burmese society. Buddhism, the religion of nearly 90 percent of the people, neither endorses nor sanctifies marriage, unlike other major religions. Both marriage and divorce are controlled through the social mores and are undertaken by mutual consent. The marriage ceremony is usually a small feast officiated by the elders. A marriage may be dissolved through "renouncement"—that is, entrance of the husband into the Buddhist priesthood. Persons affected by such marital dissolution are classified as "renounced."

The Burmese registration system does not collect statistics on marital status, and the decennial census is therefore the main source of information about nuptiality. Little is known about the marriage pattern of Burmese society, yet such knowledge would be of great demographic value as it could provide a basis for inferences about reproductive behavior in a country where few births occur out of wedlock. The relationship in most societies between marriage patterns and fertility has been shown to be strong, and such factors as average age at marriage, the proportion of the population that ultimately marries, and duration of marriage are important in explaining both high fertility and fertility decline (Hajnal 1965; Matras 1965).

According to the 1973 Census, 29.7 percent of males were single, 62.6 percent were married, 4.9 percent were widowed, 1.4 percent were divorced, and 1.5 percent were renounced (Table 6). The percentages for females were 24.5 single, 61.1 married, 12.0 widowed, 2.2 divorced, and 0.2 renounced. The lower remarriage rate of women, common also in other societies, is partly responsible for the higher observed proportion of married men than of married women in Burma. Because of low mortality and low remarriage rates among women, the proportion of widowed females was more than twice that of males, and the difference widened sharply with age so that the ratio of widows to widowers was three to one by age 60. Nash and Nash (1963) reported the very low incidence of remarriage among widows in Burma in their microdemographic study of a sample of villages in upper Burma. The overall marriage pattern in Burma revealed by Table 6 indicates that more men than women are single, married, and renounced and that more women than men are divorced and widowed.

Examination of age differentials in marital status for each sex in 1973 revealed that under age 35, proportionately more men than women were single and more women than men were married, widowed, or divorced (data not shown). The obvious reason for this finding is the universal tendency for females to marry at younger ages than males. The differential in marital status between men and women at ages 35 and over was substantial but in the reverse direction. Although practically all men and women were married, more men than women were married and more women than men were single, widowed, or divorced. From ages 35–39 onward the deficiencies in married and the surpluses of widowed among women were due to the differences in age at marriage and normal differences in mortality between the sexes as well as the general practice among divorced or widowed men of selecting new brides from younger cohorts.

Renouncement as a separate marital status category first appeared in postwar censuses, and it is not clear how the renounced persons were classified in the prewar censuses. Hauser and Kitagawa (1954) considered renounced persons equivalent to being separated or divorced. But in a society such as Burma's with an institutionalized monastic order that any man may join at any time irrespective of his marital status, not only married men but also divorced, widowed, and single men who have renounced plans for marriage join the priesthood. Therefore, the renounced category includes persons (male and female) of any previous marital status. For this reason they are treated here as a distinct group.

Table 6. Marital status of the population 15 years old and older, by age and sex: Burma, 1973

Sex and age group	Number	%					
		Total	Single	Married	Widowed	Divorced	Renounced
Males							
15–19	1,442,923	100.0	92.2	5.9	0.1	0.3	1.5
20–24	1,135,581	100.0	55.2	41.7	0.4	1.4	1.3
25–29	884,403	100.0	23.7	72.5	0.9	1.7	1.2
30–34	815,471	100.0	10.3	85.3	1.6	1.8	1.0
35–39	794,586	100.0	6.1	88.7	2.4	1.7	1.1
40–44	730,791	100.0	4.4	89.0	3.9	1.6	1.1
45–49	579,833	100.0	3.5	88.0	5.6	1.6	1.2
50–54	517,465	100.0	3.2	85.4	8.3	1.6	1.6
55–59	387,127	100.0	3.0	82.0	11.4	1.6	2.1
60–64	323,737	100.0	2.9	76.4	16.5	1.5	2.6
65+	485,241	100.0	2.9	61.4	30.1	1.4	4.2
Total	8,097,158	100.0	29.7	62.6	4.9	1.4	1.5
Females							
15–19	1,488,063	100.0	78.0	20.7	0.2	1.0	0.1
20–24	1,172,906	100.0	35.5	60.9	0.9	2.6	0.1
25–29	911,147	100.0	16.6	78.7	1.8	2.8	0.1
30–34	849,280	100.0	9.3	84.5	3.4	2.7	0.1
35–39	800,144	100.0	7.0	85.1	5.3	2.5	0.1
40–44	739,461	100.0	6.2	81.9	9.2	2.6	0.1
45–49	579,259	100.0	5.9	77.4	14.0	2.5	0.2
50–54	526,239	100.0	5.7	68.5	23.0	2.5	0.3
55–59	394,404	100.0	5.8	60.0	31.6	2.2	0.4
60–64	338,221	100.0	5.7	46.9	44.9	2.0	0.5
65+	544,391	100.0	5.5	27.3	65.0	1.3	0.9
Total	8,343,515	100.0	24.5	61.1	12.0	2.2	0.2

Source: Union of Burma (1973:52–53).

It is clear from Table 6 that in Burma renouncement is a predominantly male condition, 1.5 percent of men having declared themselves in that category in 1973 compared with 0.2 percent of women. Interestingly, the proportion renounced among males exceeded the proportion divorced. The relationship between age and the proportion renouncing followed a J-shaped curve, signifying higher proportions among the young and especially among the old than among those of intermediate ages. The high proportion among the young reflects the custom of *shinbyu* (roughly equivalent to baptism among Christians) in Burmese society. According to the custom every Buddhist boy joins the fraternity of Buddhist priests by entering the monastery and donning a saffron robe for at least a week or two. The proportion of the 1973 population in the renounced category was lowest in the reproductive age range but was sharply higher among men past middle age. This pattern corroborates the conclusion reached by Nash and Nash that as Burmese become older, their concern for religion and rebirth in the next life grows stronger: "Devotion, meditation, giving, turning the mind from this world are all means of getting merit (*kutho*) and hence building one's moral capital. With all of these things marriage and the family interfere. The most devoted, the most glorious moral estate of man is to be a monk" (Nash and Nash 1963:263). Considering the small frequency and the age pattern of renouncement, the fertility effect of this institution is not likely to be significant.

Although only small rural-urban differentials in marital-status patterns were observed in 1973, rural areas generally had a lower proportion of single, divorced, and renounced persons and a higher proportion of married and widowed persons than did urban areas. Differences between rural and urban areas in the age-sex pattern and in age at marriage for both males and females are responsible for the observed differentials in marital composition. The mean age at marriage estimated by the Hajnal (1953) method yielded 25.3 for males and 22.3 for females in urban areas as compared with 23.7 and 21.3 for males and females respectively in rural areas. The proportion renounced in urban areas was almost twice as high as in rural areas (1.4 versus 0.7 percent). The explanation for this difference is not obvious. Possibly higher unemployment in urban areas and the migration of monks to urban areas explain some of the observed difference.

RACE AND ETHNIC COMPOSITION

The diversity of race and ethnic composition is perhaps the outstanding aspect of the Burmese population. The racial ancestry of the indigenous people of Burma is usually traced to the Mongolian tribes who came to the plains of central Burma in successive waves from the north, possibly from Tibet and western China. Thus racially the Burmese belong to the Mongolian racial stock that is akin to the Chinese, but because of their greater contact with the Indians they have developed an Indo-Buddhist culture. Buddhism of the Mahayana variety has played a key role in shaping Burmese social and cultural values.

The 1973 Census secured information on race by directly inquiring about the race of respondents and their parents. Thus race was defined subjectively rather than by the criterion of respondents' language, as was the case in the prewar censuses, or by other operational indices such as dress. Officially, three broad groups of races were identified: the indigenous races, nonindigenous or foreign races, and Burmese mixed with foreign races (Ta-

Table 7. Percentage distribution of racial and ethnic groups, by sex: Burma, 1973

Group	Total	Males	Females	Sex ratio
Burman	68.0	67.6	68.2	98.0
Shan	8.9	9.0	8.9	100.1
Karen	6.6	6.6	6.6	97.9
Arakanese	4.4	4.5	4.4	100.1
Other indigenous races	6.7	6.7	6.6	99.1
Mixed Burmese and foreign races	1.5	1.5	1.5	102.7
Chinese	0.8	0.9	0.8	113.5
Indians and Pakistanis	1.9	2.1	1.8	113.1
Other foreign races	1.2	1.3	1.2	105.1
Total	100.0	100.0	100.0	98.9
Number	28,084,513	13,962,774	14,121,739	

Source: Union of Burma (1973:46).

ble 7). Of the indigenous races—which are really ethnic groups rather than racial groups—the Burman group comprised over two-thirds of the population. The remaining indigenous groups, who constituted the ethnic minorities, made up 26.6 percent of the population. Of these the Shan, Karen, Arakanese (or Rakhine), Kayah, Chin, Kachin, and Mon each have their own council of state with control over local affairs.

The ethnic balance in Burma has changed dramatically since World War II and independence. The proportion of foreign races has fallen sharply. The Indian population, which was the largest foreign group in the prewar years, declined from 7.0 percent of the total population in 1931 to 1.9 percent in 1973. The Chinese population also diminished from its prewar level of 1.3 percent in 1931 to 0.8 percent (Bennison 1931:224). Whereas the decline in the size of the Indian and Pakistani groups was due largely to emigration, the shrinkage of the Chinese proportion may be due in part to the tendency of Chinese to identify themselves as Burmese. The foreign and mixed races, forming just over 5 percent of the population, have dwindled in importance in recent years. The sex ratios of the Indians, Pakistanis, and Chinese are still higher than those of other groups.

The racial and ethnic data from the 1973 Census suggest considerable indigenization of the poulation in recent times mainly as a consequence of the mass exodus of the nonindigenous groups rather than the assimilation of foreign races into Burmese society. On the basis of the data we may conclude that the phenomenon of a plural society and the associated problem of achieving social integration, as described by Furnival (1956:30), have nearly disappeared from modern Burma. But in their place have emerged a multiethnic society and the usual problems associated with ethnic differences. Burma has been beset with ethnic-based insurgencies since independence. The achievement of peaceful coexistence between the Burman majority and several strongly differentiated ethnic minorities is a major concern in Burma at the present time. Interethnic tensions are not new; they go back to the days of the Burmese kings. Throughout Burma's long history there have been frequent struggles between the Burman on the one hand and the Shan and the Mon on the other. A few attempts at national unification were successful but did not last. The British dealt with the problem by administering the minorities separately from the rest of the population. Thus the colonial policy isolated the groups and effectively blocked majority-minority intercourse. The latent consequence of that policy was to petrify the historic pattern of interethnic relationships. The problem constitutes a serious impediment to the country's development efforts and is not likely to be solved in the immediate future.

LITERACY AND EDUCATION

Because Buddhist monastic schools (*kyaungs*) have existed in nearly all villages since traditional times, Burma is among the few developing countries with a high rate of literacy. The monastic schools are open to all boys. Their curriculum was—and is still—designed to maintain social and cultural structures rather than to stimulate social change, and subjects included religion, morals, the Burmese and Pali languages, and arithmetic. A pupil learned how to live life as a Buddhist rather than how to earn a living. With the advent of British rule there appeared for a time three other types of schools named after the language of instruction: vernacular, Anglo-vernacular, and English schools. Today school attendance is compulsory for both sexes, and most children begin school at age five.

In 1966 the school system underwent reorganization in accordance with the 1966 Fundamental Educational Act. All but a few private schools, which provided education to the children of diplomats and other foreigners, were affected. The intent was to open up educational opportunities to children from all strata of society. The newly organized system consisted of three levels: primary, middle, and high school. Standards 1 through 5 were taught in primary schools; standards 5 through 8, in middle schools; and standards 9 and 10, in high schools. Reforms in higher education were introduced in 1977 to achieve greater decentralization and make higher education accessible to the entire population. Sixteen regional colleges, similar to junior colleges in the United States, were opened. The colleges have emphasized mathematics, science, and technology at the expense of the social sciences.

In addition to these changes, the military government launched several volunteer-operated literacy campaigns in an attempt to eradicate illiteracy. The campaigns were directed mostly toward rural areas with a view toward bringing about the social and political transformation of the peasantry. In 1971 the United Nations Educational, Scientific, and Cultural Organization (UNESCO) awarded the Mohammad Reza Pahlavi Prize to Burma for its fight against illiteracy.

Data on literacy and educational attainment of the Burmese population have been available since the first census of 1872, but the analysis presented here is based on the 1973 Census data only. As can be seen from Table 8, overall illiteracy was quite low. Male illiteracy was considerably lower than female, and the rate among persons under age 30 was substantially below the rate for the total population. For both sexes the illiteracy rate was positively related to age, suggesting a general decline in illiteracy from one generation to the next. There were sizable sex differences in the illiteracy rate in every age group, but the gender gap was narrower among the younger generation. This finding may be interpreted as evidence of the literacy campaigns' greater success among females than among males.

Urban areas showed an expected lower level of illiteracy than rural areas (20.0 percent versus 37.3 percent). Urban males and females both had higher literacy levels than their rural counterparts. The percentage illiterate also differed among race groups. The Burmese and the mixed Burmese and foreign races had the lowest illiteracy (22.6 and 28.1 percent respectively), whereas the Indians and Pakistanis and the other indigenous races had rates exceeding 50 percent. Since literacy as defined by the 1973 Census was the ability to read and write in the Burmese language, the observed

Table 8. Illiterate persons as a percentage of the total population 10 years old and older, by sex: Burma, 1973

Age group	Total	Males	Females
10-14	22.4	18.3	26.7
15-19	18.7	12.7	24.5
20-24	20.2	11.9	28.1
25-29	23.3	13.2	33.1
30-34	29.2	16.2	41.8
35-39	31.3	15.5	46.9
40-44	35.0	18.7	51.1
45-49	34.0	17.7	50.2
50 +	40.9	20.9	59.9
All ages	27.8	16.3	39.1

Source: Union of Burma (1973:72-73).

Table 9. Percentage distribution of the population 10 years old and older, by sex and educational level: Burma, 1973

Sex	Education completed		
	None	1-4 standards	5+ standards
Males	60.2	22.7	17.1
Females	68.3	23.4	8.3
Total	64.3	23.0	12.7
Number	12,809,254	4,589,641	2,522,940

Source: Union of Burma (1973:72-73).

differences in literacy among racial groups may indicate their different degrees of assimilation into the Burmese culture rather than actual levels of literacy.

By 1973, 23 percent of the population 10 years old and older had completed at least one standard of primary education, and 12.7 percent had completed middle school or higher levels of education (Table 9). Of the 7.1 million persons 10 years old and older with one or more standards of education, nearly 45 percent were females. Although females slightly outnumbered males in completing primary education, their proportion dropped to about one-half at secondary and higher levels.

Urban-rural differentials in educational attainment were consistent with the differentials in literacy. Of the rural population 5 years old and older, 75.1 percent was reported as having no schooling at all, in contrast to 42.7 percent in urban areas. Nearly one-third (29.4 percent) of the urban population had completed some primary education, and 28 percent had completed middle school or higher levels of education. The corresponding percentages for rural areas were 19.9 and 5.0.

Educational attainment among persons 10 years old or older was inversely related to age, as expected. The proportion of the population having no schooling ranged from 43.9 percent among persons 10-14 years old to 92.8 percent among persons 75 and older. The percentage of persons who had completed some primary schooling was only 4.1 for persons 75 and older but 48.8 for the 10-14 age group. The population 10-14 years of age accounted for about 70 percent of those who had had some primary schooling and over half of those who had completed middle school or higher levels of education. These differences in educational attainment between young and old indicate an increase in the rate of school attendance among the postindependence cohort (but do not take into account the mortality and migration of prewar cohorts).

Literacy and education are functional requisites of industrialization. The data from the 1973 Census suggest that progress in these fields has been impressive despite the difficulties of war, insurgencies, communist uprisings, and the postwar reconstruction efforts.

LABOR FORCE CHARACTERISTICS

The 1973 Census provided fairly extensive tabulations of the labor force characteristics of Burma's population. The labor force was defined as the noninstitutional, or household, population of ages 10 and over that was either working or seeking work during the reference period of fourteen days prior to the enumeration date. According to that definition, 47.7 percent of the population participated in the labor force, nearly two-thirds of the labor force consisted of males, and a little over one-quarter of the labor force comprised either youths between ages 10 and 19 or persons over 60 years of age. Labor force participation rates among the youth and the elderly were 26.8 and 42.4 percent respectively, considered low for an agrarian society. Less than 2 percent of the labor force was unemployed. Of the population not in the labor force, half consisted of unpaid household workers, of whom nearly nine-tenths were females—a figure that reflects the persistence of the traditional role of married women in Burmese society. Students constituted over one-fourth of the population not in the labor force and were evenly divided between the sexes. The remainder of the non-labor-force population was classified as retired, disabled, in ill health, or unemployed seasonal workers and "other" (Table 10).

Table 11, which presents the composition of Burma's labor force by major industrial categories, reflects Burma's low level of industrialization. In 1973

Table 10. Noninstitutional population 10 years old and older, by labor force status and sex: Burma, 1973

Labor force status	Total	Males	Females
In labor force	9,367,054	6,262,912	3,104,142
(%)	(47.7)	(65.3)	(30.9)
Employed	9,199,395	6,128,617	3,070,778
Agriculture	5,871,783	4,083,458	1,788,325
Nonagriculture	3,327,612	2,045,159	1,282,453
Unemployed	167,659	134,295	33,364
(% of labor force)	(1.8)	(2.1)	(1.1)
Not in labor force	10,253,659	3,322,569	6,931,090
Household workers	5,425,978	298,236	5,127,562
Students	2,739,032	1,616,019	1,123,013
Other	2,088,829	1,408,314	680,515
Total	19,620,713	9,585,481	10,035,232

Source: Union of Burma (1973: tables 22,23).

Table 11. Percentage distribution of the employed population 10 years old and older, by industry and sex: Burma, 1973

Industry	Total	Males	Females
Agriculture, hunting, forestry, and fishing	63.8	66.6	58.2
Mining	0.8	1.0	0.4
Manufacturing	10.4	7.5	16.3
Construction	1.6	2.2	0.4
Electricity, gas, and related industries	0.2	0.3	0.0
Wholesale and retail trade	11.2	7.4	18.5
Transportation and communication	3.0	4.4	0.2
Services	5.7	7.0	3.1
Unclassified	3.4	3.7	2.9
Total	100.0	100.0	100.0
Number	9,199,395	6,128,617	3,070,778

Source: Union of Burma (1973: table 22).

most of the work force (64.6 percent) was engaged in farming, fishing, and mining industries; only 12 percent was in the secondary sector of manufacturing and construction. The tertiary sector had absorbed one-fifth (20.1 percent) of the work force.

The occupational structure (shown in Table 12) was similarly dominated by rural-oriented farming and related occupations. Nearly two-thirds of the working population sought their livelihood through agricultural pursuits. At the other extreme was a small group of administrators, executives, and managers (less than 0.5 percent of workers) who administered a large body of skilled and semiskilled craftsmen and production process workers. Workers in other white-collar occupations were also sparse. Professional, technical, and related occupations accounted for 2.2 percent; clerical and kindred workers, 2.3 percent; and sales workers, 8.5 percent.

The male and female occupational structures show interesting differences and similarities. Proportionately more males than females were employed in administrative, managerial, clerical, and service occupations, whereas the reverse was true for sales occupations. Yet the proportion of females in professional and related occupations was about the same as that of males.

The 1973 data thus indicate that the structure of the Burmese labor force had little differentiation. As expected, it represented an essentially agrarian society in which nearly two-thirds of the work force was engaged in

Table 12. Percentage distribution of the employed population 10 years old and older, by occupation and sex: Burma, 1973

Occupation	Total	Males	Females
Professional and technical	2.2	2.3	2.2
Administrative and managerial	0.4	0.5	0.2
Clerical	2.3	2.9	1.1
Sales	8.5	5.0	15.4
Services	1.7	2.2	0.7
Agriculture, hunting, forestry and fishing	63.3	65.9	58.0
Production and related work	20.7	19.8	22.5
Unclassified	0.9	1.4	0.0
Total	100.0	100.0	100.0
Number	9,199,395	6,128,617	3,070,778

Source: Union of Burma (1973: table 25).

agriculture and related work and only a small number of workers were administrative, professional, and clerical personnel.

FERTILITY AND MORTALITY

The vital registration system, begun in India in 1864, was first introduced to some parts of lower Burma and then gradually extended to other parts of the country. By about 1907 it covered over 80 percent of the population (Sundrum 1957:7).

In Burma, as in most nations of the region, the registration of births and deaths has remained incomplete even in areas covered by the registration system. Censuses have shed light on the extent of underregistration. It was estimated in 1911, for example, that as many as 20 percent of the births in the city of Mandalay were unregistered (Webb 1911:43). Moreover, the types of information on births and deaths are grossly inadequate for any in-depth analysis of fertility and mortality. For example, birth statistics have not been published by age of parents, birth order, or occupation of parents.

In spite of these defects the vital statistics of Burma, under certain conditions, can provide valuable information about fertility and mortality trends. When used in combination with the census data they can provide useful insights into the salient features of Burmese demography.

The registration of births and deaths was interrupted during World War II and the Japanese Occupation, and it did not resume until 1947. Postwar statistics are limited to certain cities and towns. A glance at Table 13, which

Table 13. Vital statistics for Burma, 1920–39 and 1951–78

Period or year	Births per 1,000 population	Deaths per 1,000 population	Infant mortality (deaths per 1,000 infants under age 1)
1920–24	28.5	21.1	184.6
1925–29	24.3	19.1	204.9
1930–34	27.6	18.3	198.2
1935–39	32.1	22.0	202.3
1951	46.1	39.3	252.8
1957	35.8	21.3	164.3
1962	36.2	16.0	121.5
1967	41.0	12.2	66.5
1970	36.2	10.8	62.8
1972	38.8	11.3	61.0
1973	35.8	11.1	56.8
1974	33.7	11.3	49.8
1975	31.5	10.5	53.8
1976	29.3	10.6	54.2
1977	29.1	10.4	56.3
1978	28.3	10.1	50.0

Sources: Births, 1920–24 to 1935–39: United Nations (1959a:210–11).
Deaths and infant mortality, 1920–24 to 1935–39: United Nations (1967:288–89, 348–49).
Data for 1951–78: Steinberg (1981:87).

gives crude birth, death, and infant mortality rates for prewar years (in five-year averages) and for the postwar years up to 1978, shows that both the death rate and the infant mortality rate declined continuously after the war. The trend in the birth rate, which is less clear, suggests several influences. Prewar birth rates were generally low, perhaps reflecting low fertility during the colonial times. Although the postwar rates were for urban areas only, they were much higher than the prewar figures. Since 1972 there has been a slight downward tendency in the birth rates.

At least two reasons may be speculated for the higher birth rates in the immediate postwar years. First, a postwar baby boom began about 1945 in many countries of the world and may have occurred also in Burma. But the magnitude of the surge in births and its duration cannot be determined owing to lack of data. Second, since the postwar birth rates are for urban areas, where the registration of births was likely to be more complete than in rural areas, exclusion of rural births from the calculation would yield higher figures than for the country as a whole.

Deficient as they are, the official data can hardly be relied upon to indicate the true magnitude of Burma's birth, death, and infant mortality rates.

To infer the probable levels of fertility and mortality, experimental calculations were done to estimate birth and death rates. The calculations employed the Coale and Demeny (1966) West regional model life tables and stable populations and the assumptions of stability and quasi-stability of the Burmese age distribution.[3] The following two sets of estimates were derived by pairing the 1973 Census age distribution for females with six hypothetical growth rates; in the case of quasi-stability a decline in mortality since 1953 was assumed. If the growth rate of 2.0 percent per annum is assumed to be most probable between 1953 and 1973, the stable estimate yields annual rates of 39.2 births and 19.2 deaths per thousand population, whereas the quasi-stable estimate gives somewhat higher rates of 41.6 and 19.6. Comparison of these figures with those given in official Burmese publications suggests that the actual birth and death rates might be higher than indicated. The differences probably reflect underregistration.

	Stable population		Quasi-stable population	
Growth rate (%)	Birth rate	Death rate	Birth rate	Death rate
2.0	39.2	19.2	41.6	19.6
2.1	38.5	17.5	41.2	17.9
2.2	37.7	15.7	40.8	16.1
2.3	36.9	13.9	40.3	14.3
2.4	36.3	12.3	39.9	12.6
2.5	35.7	10.7	39.6	11.0

Because of the defects in death registration the calculation of a life table for Burma has been a particularly difficult task, and even today there is no continuous series of life tables for the population of Burma. Perhaps no measure speaks more eloquently of the mortality conditions of a population than expectation of life at birth. Life tables computed solely on the basis of the 1921 and 1931 censuses showed expectation of life for Burma

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3. United Nations Manual IV (United Nations 1967) describes a collection of new techniques for estimating birth rates, death rates, and other demographic parameters of populations for which only incomplete data exist. The method based on stable and quasi-stable population models has been used to arrive at the estimates of birth and death rates for Burma. The method requires data on the decennial growth rate and a quinquennial age-sex distribution. This method of estimation depends upon several assumptions about the population: that it is closed to migration, that age data are reliable, and that stable population models and the life tables to be used in the estimation reflect the underlying characteristics of the population for which vital rates are being estimated. It is important to bear these limiting assumptions in mind when interpreting the estimated figures. The actual calculations were done by means of the subroutine ONECN of the U.S. Census Bureau's computer programs for demographic analysis (see Arriago 1976:293–321).

to be 30.8 years. This figure was higher than that of any of the major provinces of India, where life expectancy ranged between 24.4 and 29.4 years during the same period. Kingsley Davis (1951:64) remarked that Burma "has a better record than any part of India and this has always been the case. The difference seemingly represents a real fact about Burma in comparison to the Indian areas."

If the trends in the male and female life expectancy in Burma since 1921, presented in Table 14, are to be trusted, mortality of the Burmese people has improved considerably over the past half century. Most of the improvement, however, took place in the period immediately following World War II.

SUMMARY AND CONCLUSIONS

Analysis of the 1973 Census indicates that the population of Burma has entered the early phase of demographic transition in which death rates decline but births remain high. Mortality has fallen since World War II, and expectation of life at birth has substantially improved for both sexes. Although direct evidence is lacking, it is probable that fertility rose after 1962 in response to improved health conditions and the government's laissez-faire attitude toward fertility and population growth. The population growth rate, though still low for an Asian country, has increased since 1960 and is now estimated to be about 2 percent per year. In 1973, 41.5 percent of Burma's 28 million inhabitants were under age 15, and 6 percent were older than 60. Estimated mean ages at marriage for males and females and the proportion of single females were all somewhat higher than might be expected.

A large exodus of foreign residents and a government policy since independence of restricting immigration has normalized the previously high sex ratio of the population so that the overall sex ratio of 1973 resembled that of the indigenous population during the prewar years. Considerable indigenization of the population has taken place since the military coup of 1962, with the result that only 5 percent of the population was classified as foreign in 1973.

The pace of urbanization has been slow in Burma. About one-quarter of the population was classified as urban in 1973 and again in 1983. But educational levels have risen substantially in recent years. By 1973 nearly three-quarters of the population was literate and slightly more than one-third had completed some formal schooling. Education of females, traditionally neglected, has shown especial improvement. Burma's economy is predominantly agrarian, with nearly two-thirds of the work force engaged in agriculture.

Population growth can be seen as both a resource and a constraint. For a developing country like Burma, rapid growth is likely to be more of a

Table 14. Expectation of life at birth: Burma, 1921–80

Period	Males	Females
1921–31[a]	30.6	31.0
1950–55[b]	38.7	41.4
1955–60[b]	41.1	44.0
1960–65[b]	43.6	46.5
1965–70[b]	46.1	49.0
1970–75[b]	48.6	51.5
1975–80[c]	51.0	54.1

Sources: a. United Nations (1967:718).
b. United Nations (1979:522).
c. United Nations (1982:896).

constraint to development than a resource. The current trend toward a more youthful population can be expected to generate many problems. For example, it will increase the need for teachers, school buildings, and school administrators. The difficulty of providing jobs for growing numbers of youthful entrants to the labor market is likely to cause hardship for many families and individuals. Furthermore, a youthful age structure implies a demographic momentum for some years that will fuel further population growth. Future cohorts in the reproductive ages are likely to be larger than preceding ones, thus increasing the annual number of births unless reproductive behavior is modified by new social forces such as changes in attitudes and preferences. All other things being equal, the trend toward a young population can be expected to interfere with the economic modernization programs aimed at raising the living level of the people. Demographic research is needed about the means and stages at which Burma's population growth rate might be stabilized.

There are no visible signs of population pressure in Burma at present. The crude density of 52 persons per square kilometer is low by modern standards. Burma is rich in natural resources that are yet to be exploited. Development of those resources to raise the living level of the population has been the major planning objective of Burma's recent governments. The present government views the current labor shortage as an obstacle to development and sees the rapid population growth of the 1960s with little alarm. Burma's population challenge lies not so much in providing subsistence to a growing population as in developing its human resources. A shortage of professional and skilled labor has been particularly acute in recent times owing to the departure of such persons from the country.

More studies are needed for a comprehensive assessment of Burma's economic and social trends. The 1983 Census collected much more information about the Burmese population than the 1973 Census and, when tabulated and published, will permit a fuller exploration of demographic dynamics in Burma. Until then, Burma will remain an enigma to demographers, just as demography has been comparatively unknown in Burma.

REFERENCES

Arriago, Eduardo, Patricia Anderson, and Larry Heligman

1976 *Computer Programs for Demographic Analysis.* Washington, D.C.: U.S Bureau of the Census.

Bennison, J.J.

1933 *Census of India, 1931.* Vol. XI, *Burma, Part I. Report.* Rangoon: Superintendent, Government Printing & Stationery.

Burney, H.

1842 On the population of the Burman Empire. *Journal of the Royal Statistical Society* 4:335–47.

Coale, Ansley J.

1956 The effects of changes in mortality and fertility on age composition. *Milbank Memorial Fund Quarterly Bulletin* 34(1):79–114.

Coale, Ansley J., and Paul Demeny

1966 *Regional Model Life Tables and Stable Populations.* Princeton: Princeton University Press.

Copelston, F.S.

1882 *Report on the Census of British Burma, 1881.* Rangoon: Government Printing Press.

Davis, Kingsley

1951 *The Population of India and Pakistan.* Princeton: Princeton University Press.

Duncan, H.T.

1875 *Report on the Census of British Burma, 1872.* Rangoon: Government Printing Press.

Eales, H.L.

1892 *Census of 1891. Imperial Series,* Vol. IX. *Burma Report,* Vol. I. Rangoon: Superintendent, Government Printing.

Economic and Social Commission for Asia and the Pacific (ESCAP)

1984 *Population Headliner* No. 106, January. Bangkok.

Furnival, J.S.

1956 *Colonial Policy and Practice: A Comparative Study of Burma and Netherlands Indies.* Second edition. New York: New York University Press.

Grantham, S.G.

1923 *Census of India, 1921*. Vol. X, *Burma, Pt. I. Report*. Rangoon: Superintendent, Government Printing.

Hajnal, John

1953 Age at marriage and proportion marrying. *Population Studies* 7(2): 111–36.

1965 European marriage pattern in perspective. In *Population in History*, edited by D.V. Glass and D.E.C. Eversley. London: Arnold.

Hall, D.G.E.

1950 *Burma*. London: Hutchinson's University Library.

Harvey, G.E.

1947 *Outline of Burmese History*. Bombay: Longmans, Green.

Hauser, Philip M., and Evelyn M. Kitagawa

1954 Demographic glimpses into Burma. In *The Interrelations of Demographic, Economic and Social Problems in Selected Underdeveloped Areas: Proceedings of the 1953 Annual Conference*. New York: Milbank Memorial Fund.

Htain Lin

1976 Burma: 1973 Population Census. In *Introduction to the Censuses of Asia and the Pacific, 1970–74*, edited by Lee-Jay Cho. Honolulu: East-West Population Institute, East-West Center.

Kaul, B.N.

1930 Some aspects of the population problem in Burma. Unpublished Ph.D. dissertation, University of London Library.

Lowis, C.C.

1902 *Census of India, 1901*. Vol. XII, *Burma, Part I, Report*. Rangoon: Superintendent, Government Printing.

Matras, Judah

1965 The social strategy of family formation: Some variations in time and space. *Demography* 2:349–62.

McEvedy, Colin, and Richard Jones

1978 *Atlas of World Population History*. New York: Penguin Books.

Nash, June, and Manning Nash

1963 Marriage, family, and population growth in Upper Burma. *Southern Journal of Anthropology* 19(3):251–66.

Preston, Samuel H.

1975 Health programs and population growth. *Population and Development Review* 1(2):189–99.

Steinberg, David I.

1981 *Burma's Road toward Development: Growth and Ideology under the Military Rule.* Boulder: Westview Press.

Sundrum, R.M.

1957 *Population Statistics of Burma.* Economic Research Project, Paper No. 3. Rangoon: Department of Economics, Statistics, and Commerce, University of Rangoon.

Trager, F.N., and W.J. Koenig

1979 *Burmese Sit-tans, 1764–1826.* Tucson: University of Arizona Press.

Union of Burma

1957 *Population and Housing, First Stage Census, 1953,* Vol. 1. Rangoon: Commissioner of the Census.

1963 Population projections of Burma, 1961–2001. (Mimeographed.) Rangoon: Census Department.

1973 *Population Census (Union Volume).* Rangoon: Ministry of Home and Religious Affairs, Department of Immigration and Manpower.

1983 *1983 Population Census (Advanced Release).* Rangoon: Ministry of Home and Religious Affairs, Department of Immigration and Manpower.

United Nations

1959a *Demographic Yearbook, 1959.* New York.

1959b *The Population of Asia and the Far East, 1950–1980.* Population Studies, No. 31. New York.

1964 *Demographic Yearbook, 1963.* New York.

1967 *Demographic Yearbook, 1966.* New York.

1967 *Methods of Estimating Basic Demographic Measures from Incomplete Data.* Department of Economic and Social Affairs, Bureau of Social Affairs, Population Studies, No. 42. New York.

1973 *The Determinants and Consequences of Population Change,* Vol. 1. New York.

1979 *Demographic Yearbook 1978, Historical Supplement: Special Issue.* New York.

1980 *Demographic Yearbook, 1979.* New York.

1982 *Demographic Yearbook, 1980.* New York.

Vajda, Emil

1960 Burmese urban characteristics: A size of place study of a South-East Asian population. Unpublished Ph.D. dissertation, Department of Sociology, University of Chicago.

Webb, C. Morgan

1912 *Census of India, 1911*. Vol. IX, *Burma, Pt. I. Report*. Rangoon: Superintendent, Government Printing.

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Population aging in Australia: Implications for social and economic policy

Graeme Hugo

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PREFACE

This paper is one of the products of a research and teaching program, based in the School of Social Sciences of Flinders University, on the nature and policy implications of aging in Australia. I would like to express my appreciation to Flinders University and especially to the Geography Discipline for support and assistance, not just in the preparation of the present paper, but also in the establishment and continuation of the Aging Program. Sections of this paper were originally presented at the East-West Population Institute's Summer Seminar in Population in Honolulu in June 1985 and others at the session on "Aging, Social Security, and Economic Behavior" at the International Population Conference sponsored by the International Union for the Scientific Study of Population in Florence in June 1985. The current draft benefited from comments made by colleagues at both those meetings and from helpful comments of two anonymous reviewers. My grateful thanks go to my research assistants, Deborah Faulkner and Janet Matta; to the publications staff of the East-West Center; and to Jean Lange of Flinders University, who typed the various versions of the paper.

ABSTRACT Although Australia's population is in transition between the young age structure characteristic of developing countries and the old age structure characteristic of Europe, in recent years the rate of increase in the elderly population has been steeper than in almost all other developed countries. Australia's recent immigration, fertility, and mortality trends have resulted during the 1980s in an unprecedentedly rapid increase not only in the numbers of older Australians but also in the proportions they make up of the total population. Social security programs for the aged in Australia were extended and improved dramatically in the late 1970s during a period of stability or growth of the young population.

After briefly reviewing the contemporary demographic aging of Australia's population and its likely course over the next two decades, the paper examines the Australian social security system, which differs substantially from others in most developed countries, including the United States, in that it is noncontributory and historically has focused on the alleviation of poverty rather than replacement of earnings. Liberalization of the eligibility criteria for the age pension, however, has resulted in its original function being supplanted to such a degree that most elderly people view the pension as earnings replacement and a right earned by paying taxes during their working lives. The paper argues that widened access to government-subsidized or funded pensions, private superannuation, and a range of services available to the aged have influenced their behavior. In particular, it demonstrates that these changes have contributed to modifying age at retirement, migration behavior, housing, and living arrangements of the elderly.

The implications of these changes, especially for public spending, in the face of the impending very rapid growth of the aged population are just beginning to be grasped by policymakers and the community generally. This recognition has begun to produce pressure to change the social security provisions for the aged. Some of the proposed changes are reviewed and their possible effects upon the behavior and well-being of the Australian aged population are briefly addressed. It is argued that the present system, while creating the impression of availability to all, in fact disproportionately favors the better-off segments of the older population. With the likelihood that current overall per capita support for the aged is to be reduced in the face of rapid growth in their numbers, there is a danger that existing inequalities will be exacerbated, especially if a political strategy of universal, across-the-board cutbacks in provision is preferred to reductions in eligibility for support and services.

Recent immigration, fertility, and mortality trends in Australia have resulted during the 1980s in an unprecedentedly rapid increase not only in the numbers of older Australians but also in their proportion of the total population (Hugo and Wood 1984). Social security programs for the aged were extended and improved dramatically in the 1970s during a period of growth or stability of the young population in comparison with the aged. These programs in turn were partly influential in modifying the behavior of the elderly, especially their age at retirement, migration, and housing and living arrangements. Policymakers and the wider community have just begun to grasp the economic and social implications of the rapid growth of the aged population that has begun in the 1980s and will continue in the early years of the twenty-first century, with the result that pressure is starting to build for changing the social security system for the aged. This paper reviews some of the proposed changes and their possible effects on the behavior and well-being of the Australian aged population.

AGING OF THE AUSTRALIAN POPULATION

Australia's elderly population is growing at a rate of 2.5 percent per annum, nearly twice as fast as the population as a whole. Between the 1971 and 1981 censuses the number of Australians 65 years old or older increased by one-third to 1.46 million and from 8.3 to 9.8 percent of the population. Moreover, even more rapid growth of the older population is in store. The most recent official projections suggest that by the year 2001 there could be an additional 820,300 aged persons and by 2021 the aged population could number 3,492,100, or 14.6 percent of the population (ABS 1985c). Figures 1 and 2 show that during the 1980s and beyond the 65+ population will be the fastest growing segment of the population. Table 1 indicates that the fastest overall growth in the 65+ age group is occurring in the 1980s, when it is double the rate for the total population. The growth rate of that age group will halve in the 1990s (but will still be substantially higher than that of the total population) as the smaller cohorts born in the 1930s and early 1940s enter the older ages. The rate of increase in the 65+ population will begin to rise again, however, in the first decade of the next century as the postwar baby-boom birth cohorts begin to reach older ages.

It is important to note that in Table 1 there are wide differences in the projected growth trajectory *within* the 60+ population. In both the 1980s and the 1990s the fastest rates of growth will be in the oldest age cohorts. Hence the impact of aging on demands for specialized services is likely to be exacerbated. In the first decade of the next century the fastest growth will be in what Neugarten (1974) refers to as the "young-old" age group (those between the ages of 55 and 75), under the influence of the aging of the postwar babies; nevertheless, the growth of the oldest age group will still be very high. The rapid growth of the "old-old" group, especially in the current decade, should be stressed: The 75+ population will more than double between 1981 and 2001.

Thus the age structure of the population over 65 is altering and in itself is aging. In 1901 some 75 percent of persons over 65 were between ages

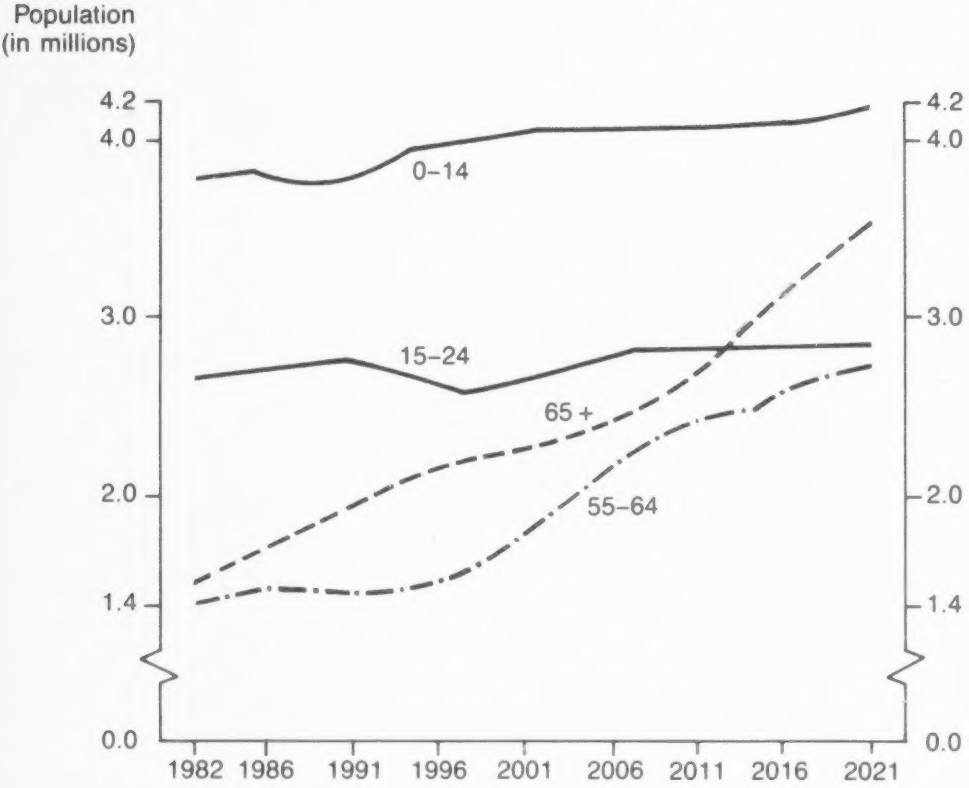

Figure 1. Projected population growth in dependent age groups: Australia, 1982–2021
Source: DIEA (1983:9).

65 and 74 and only 10 percent were older than 80 (Graycar 1981:282). By 1981 the proportion of those over 65 and under 75 had declined to 64.4 percent while the proportion 80 and over had increased to 17.7 percent. These differences in the age structure of the elderly population will continue to increase over the next forty years. In the last two decades of this century the fastest growth rates will be in the oldest age groups, so that by the year 2001 the population 75 and over will have doubled and the proportion of the population 80 and over will have increased to over 24 percent.

One of the major issues of concern as the population ages is the changing ratio of the "dependent" population (those under 15 and over 64) to those between the ages of 15 and 64. It has been feared that over the next twenty to thirty years the economically active age group (generally taken as those 15–64) will not be able to supply a large enough tax base to support the dependent age groups, especially the elderly. Aging, however, does not mean that the total burden of dependency is likely to increase. In fact,

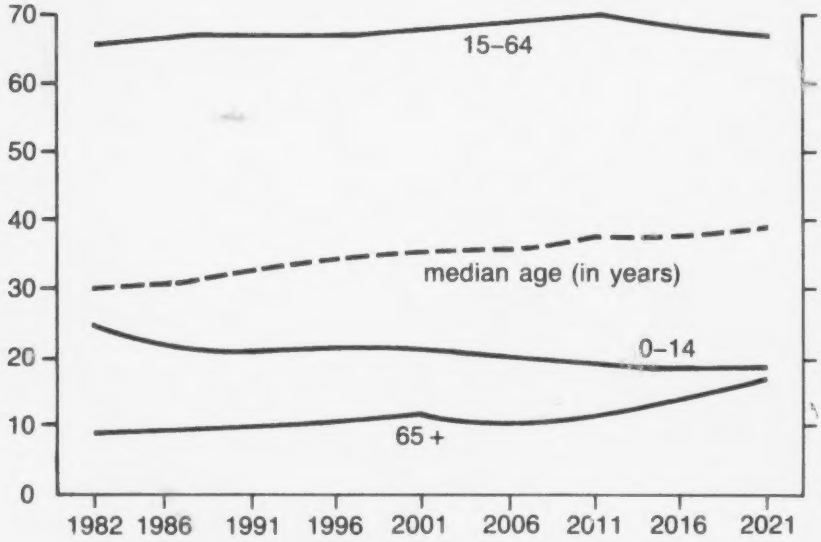

Figure 2. Projected distribution of population in broad age groups: Australia, 1982–2021 (%)
Source: DIEA (1983:10).

Table 2 shows that until the year 2011 the dependency ratio in Australia will undergo little overall change and the proportion of the population of working age will rise and not decrease. For example, in 1901 there were 64.5 people under 15 or over 64 for every 100 in the working-age group. By 1981 this ratio had fallen to 52.9, and ABS projections suggest that it will continue to fall over the next twenty years. It is evident in Table 2, however, that there will also be a gradual shift away from a dependency ratio heavily skewed in favor of children. Over the next thirty years aged dependents will be far more numerous than young dependents. Some analysts have interpreted this trend to mean that increased expenditure for the elderly can be offset by lower public costs for educating and maintaining the young. But it has been estimated that the Australian government spends 2.3 times more for an older person on average than for a young person (D. Dixon and Crompton 1983:6). It should be borne in mind that, as Betts (1984:64) points out, such accounting procedures are biased because, although most of the costs of supporting the elderly (through pensions, etc.) show up in the government ledger, the costs of bringing up children are borne predominantly by parents, especially by women. Thus for government the problem is that, whereas parents share the major economic burdens of their dependent children with government, the elderly are largely supported through government expenditures. Hence a shift in

Table 1. Projections of the older population: Australia, 1981-2011

Age group	Number (in thousands)				% change		
	1981	1991	2001	2011	1981-91	1991-2001	2001-2011
60-64	613.9	721.0	775.8	1,169.7	17.6	7.6	50.8
65-69	536.2	656.1	637.1	867.6	22.4	−2.9	36.2
70-74	401.5	503.2	599.1	645.4	25.3	19.1	7.7
75-79	260.6	358.8	482.9	469.4	48.0	25.2	−2.8
80-84	154.1	233.7	305.5	360.1	51.7	30.7	17.9
85+	102.6	149.5	234.5	301.0	45.7	56.8	28.4
65+	1,455.0	1,928.3	2,259.1	2,643.5	32.5	17.2	17.2
Total age groups	14,923.3	16,937.7	18,917.4	20,561.1	13.5	11.7	8.7

Source: ABS (1985c).

Table 2. Actual and projected dependency ratios: Australia, 1978-2011

Ratio	No. of persons 15-64 per 100				
	1978	1983	1991	2001	2021
Total dependency ratio (<15 or 65+)	55	52	50	50	48
Aged dependency ratio (65+)	14	15	17	18	19
Young dependency ratio (<15)	41	37	33	32	29

Sources: ABS (1982d: Series A Projections; 1982c: Estimated Resident Population by Age Data).

the age distribution of dependents from the young to the old in itself is going to place a great strain on the tax base.

Although the number and proportion of aged persons in Australia is increasing, Australia's population occupies an intermediate position between the demographically young age structures of developing countries, where no more than 4 percent of the population are aged, and the old populations of Western Europe, where elderly persons represent 14 or more percent of the population (PRB 1985). Figure 3 shows that, compared with most European countries, Australia still has a young population, similar to that of the United States. But in recent years the rate of increase in the population 65 years old and over has been more rapid in Australia than in the United States.

SOCIAL SECURITY FOR THE AGED

The aged pension in Australia was developed primarily to deal with the problem of poverty among the aged (Borowski 1984:2), and it was assumed

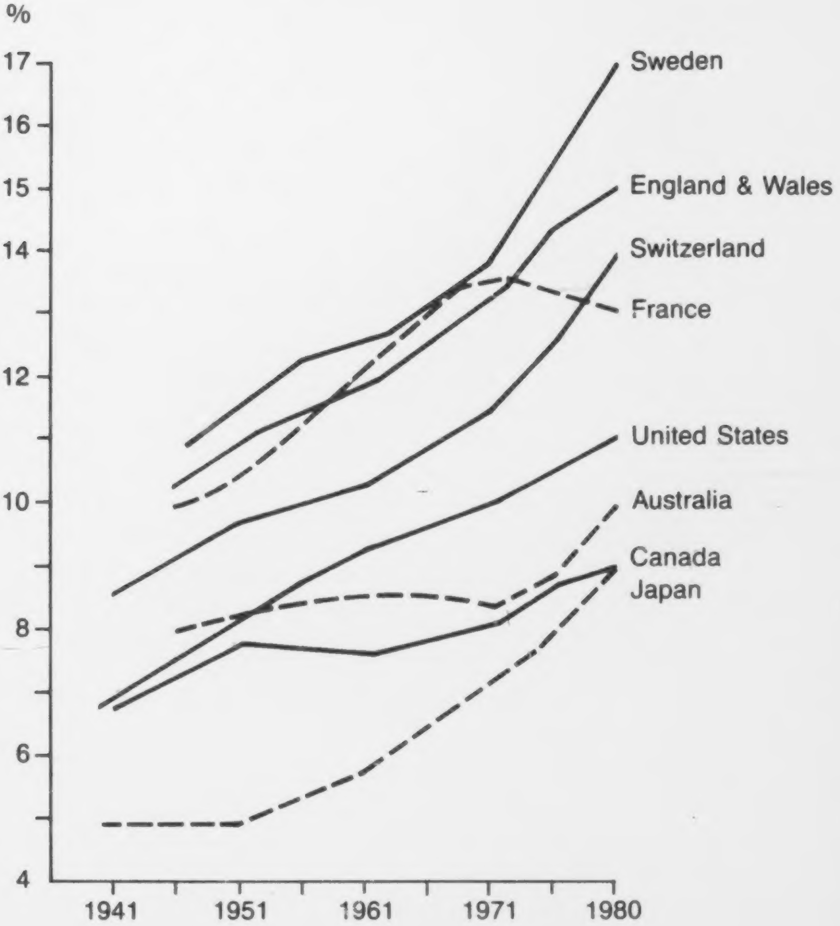

Figure 3. Percentage of the population 65 years old and over: Australia and other selected countries, 1941–80
Sources: Stone and Fletcher (1980); PRB (1983).

that economic provision for old age among the nonpoor did not require governmental intervention. Schulz (1985:6) contrasts this program approach based on means with that in the United States, where all workers in covered employment are required to participate and receive benefits as a matter of right. Schulz states (p. 9) that in Australia

> [the] focus of the age pension is on alleviating poverty and not on maintaining pre-retirement living standards into retirement through the earnings replacement of various pension schemes. Tax policies to encourage occupational superannuation schemes were seen as a way of promoting the other objective, replacement of earnings.

Australia was one of the first countries to establish an age pension scheme. Provision of cash allowances on a noncontributory basis to selected sections of the aged community dates back to 1900 (J. Dixon 1981:65).

Eligibility for social security

The Commonwealth government took over provision of aged pensions in 1909, when a pension of A$52 per annum was paid to men and women 65 years old or over provided their income did not exceed $104 per annum and their accumulated property was not valued at more than $620. The pension was reduced by $1 for every dollar of income exceeding $52 and by $2 for every $20 of property above $100 in value. As Graycar and Kinnear (1981:57) point out, the test of means has been the subject of continual debate since then. The means test was progressively liberalized in 1946, 1954, the late 1960s, and the late 1970s. In 1973 it was abolished for all people 75 and over and in 1975 for those 70 and over. In 1976 the means (including assets) test was replaced by an income test and the base pension rate became fully indexed for inflation. Hence the postwar period up to the late 1970s saw a progressive liberalization of the pension program for older Australians. The culmination of this pattern is seen in the Exhibit, which describes the eligibility requirements for government welfare pensions and relevant benefits for older people in June 1983. By the early 1980s, then, most Australians 70 years old or more who had been resident in the country for at least ten years[1] were eligible for the aged or another pension and those under 70 were subject to an income test, which has been liberalized to the extent that by 1983 some 77 percent of persons 65 to 69 years old were receiving a pension of some kind.[2]

The impact of liberalizing the eligibility criteria for pensions is reflected in Table 3, which shows that the increase in the number of persons receiving the aged pension has far exceeded the rate of increase of the aged population. The number of aged pension recipients has doubled since the 1971 census, and the proportion that they make up of the total population has increased by about three quarters, as has their ratio to the work force. Between 1973 and 1983 the annual expenditure on aged pensions increased by 448 percent—from 888 to 4,868 million dollars. The latter figure represented 3 percent of gross domestic product, 7.1 percent of all government outlays in Australia, and 10.6 percent of Commonwealth government expenditure. The proportion of older people receiving the pension has in-

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1. The ten-year residency requirement has been an issue of debate, and several overseas-born ethnic groups have been lobbying to get the eligibility period reduced.
2. In mid-1984 the maximum aged pension was payable to people 65–69 years old if they earned less than $30 per week, and no pension was payable if weekly earnings exceeded $213.80 per week.

EXHIBIT Eligibility requirements for government welfare recipients: Australia, June 1983

Age pension

The age pension is provided, subject to an income test, at ages 65 (males) and 60 (females). For persons 70+ a basic pension (equivalent to the rate applied in May 1978) is paid irrespective of income. However, increments since October 1978 are subject to the same income test that applies to persons under 70. In November 1983 the differential treatment of persons 70+ was removed.

Invalidity pension

Recipients of the invalidity pension must be age 16+ and have a permanent 85 percent incapacity for work or be permanently blind. Except for persons permanently blind the pension is subject to an income test.

Service pension

The service pension is payable, subject to an income test, to veterans who served in a "theatre of war" overseas, males who have attained 60 years, and females who have attained 55 years or are permanently unemployable.

Wives' pension

The wives' pension is payable to wives of aged, invalided, or service pensioners provided the wives do not qualify for a pension in their own right.

Widows' pension

Class A widows' pension is payable to widows with at least one child. Class B widows' pension is paid to older women who do not have a qualifying child. An income test is applied.

Unemployment benefit

The unemployment benefit is designed to provide income support to unemployed persons who do not directly participate in a strike and who pass the "work test"—that is, who are willing and capable of undertaking suitable work and have taken reasonable steps to obtain work.

Sickness benefit

The sickness benefit is paid upon a doctor's certificate to persons too ill to work.

Special benefit

The special benefit is paid to persons unable to earn a sufficient livelihood to support themselves and their dependents and not entitled to any other assistance from the government.

Source: BLMR (1983:407).

Table 3. Persons receiving the aged pension: Australia, 1971–83

Age pensioners	1971 (June)	1981 (June)	1983 (Dec.)
Number	758,700	1,327,900	1,557,296
As percentage of total population	5.9	9.0	10.1
As percentage of work force	13.5	19.7	22.3
% 65–69 receiving pension	54.6	66.4	77.3
% 70+ receiving pension	70.2	93.1	97.2

Sources: DSS (1983); ABS (1982a:40–41).

creased greatly over the last decade partly as a result of a widening of the eligibility criteria for the age pension. There have also been substantial increases in the acceptance rate among aged persons who are eligible. A major shift has occurred in societal attitudes toward the pension, the proportions regarding it as a form of charity being greatly reduced and those considering it a right, earned by a lifetime of paying taxes to support earlier generations of older persons, increasing. These trends are of major concern to the community that must confront them in the immediate future.

The value of social security payments

Not only has the proportion of older persons receiving pensions increased substantially, but also the level of the pension itself has increased in real terms, as Table 4 shows. The adequacy of the aged pension for the needs of older persons in Australia is a matter of public debate. On one hand, aged pensioners are eligible for a range of other benefits (such as free medical treatment and pharmaceuticals, reduced costs for utilities and telephone, reduced public-transport fares, and council rates[3]) from federal, state, and local governments (ACIR 1983). On the other, the amount that older people are allowed to earn before their pension entitlement is reduced has been increased only three times since 1967. The Bureau of Labour Market Research (BLMR 1983:52) has shown that these latter increases have not kept pace with increases in average weekly earnings or costs. This lag has contributed to an increase in the ratio of partial to full pensions over the last decade.

The BLMR (1983:51) has plotted the changes in the replacement rate of pensions in Australia between 1965/6 and 1984 (shown in Figure 4). The replacement rate is defined as the ratio of the maximum value of the pension to average weekly earnings (either gross or net of tax). There were a

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3. Council rates are annual costs levied by local governments on property owners for services they provide (for example, garbage collection and road maintenance). The rates are determined on the basis of the improved or unimproved value of the property.

Table 4. Age pension as a percentage of average weekly earnings: Australia, 1969–84

	Married rate		Standard rate	
Year (ending 30 June)	A$/week	% of average weekly earnings	A$/week	% of average weekly earnings
1969	25.00	34.4	14.00	19.3
1971	28.50	32.3	16.00	18.2
1975	60.00	38.3	36.00	23.3
1978	85.80	39.7	51.45	23.8
1981	111.10	37.8	66.65	22.6
1983	143.20	38.6	85.90	23.1
1984	153.30	39.2	91.90	23.5

Sources: ABS (1982c:41); DSS (1984, 1985).

substantial increase in both gross and net replacement rates in the early 1970s, a leveling off in the second half of the 1970s, and a slight fall in the net rate after 1978/9. Overall, during the 1970s the real value of the pensions paid to older Australians increased slightly.

In any consideration of the well-being of older persons, their wealth or income levels must loom large. Personal income of most people is cut by one-third to one-half upon retirement, and this reduction results in households headed by aged persons having considerably lower median and mean incomes than those headed by persons of working age, as Figure 5 shows. Some 80 percent of persons 65 years old and over in 1981/2 cited the government aged pension as their principal source of income. Table 5 shows that in recent years the proportion of aged persons dependent mainly upon pensions has increased marginally but the proportion dependent on superannuation funds[4] has doubled. Hence the expansion of superannuation funding in Australia in the 1960s and 1970s is starting to have an impact on the earnings of older people. The large reduction in workforce participation is evident in the dramatic fall in the proportion of older persons dependent upon wages or a salary for income.

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[4] An occupational superannuation scheme in Australia is a voluntary scheme to which employees may contribute on a regular basis during their working years. Employers usually subsidize the scheme on some basis. Upon retirement it provides a private pension to the contributor, who may also receive a government pension if his or her income does not exceed a specific level. Most occupational superannuation schemes allow members to retire before the compulsory retirement age and receive actuarially reduced benefits.

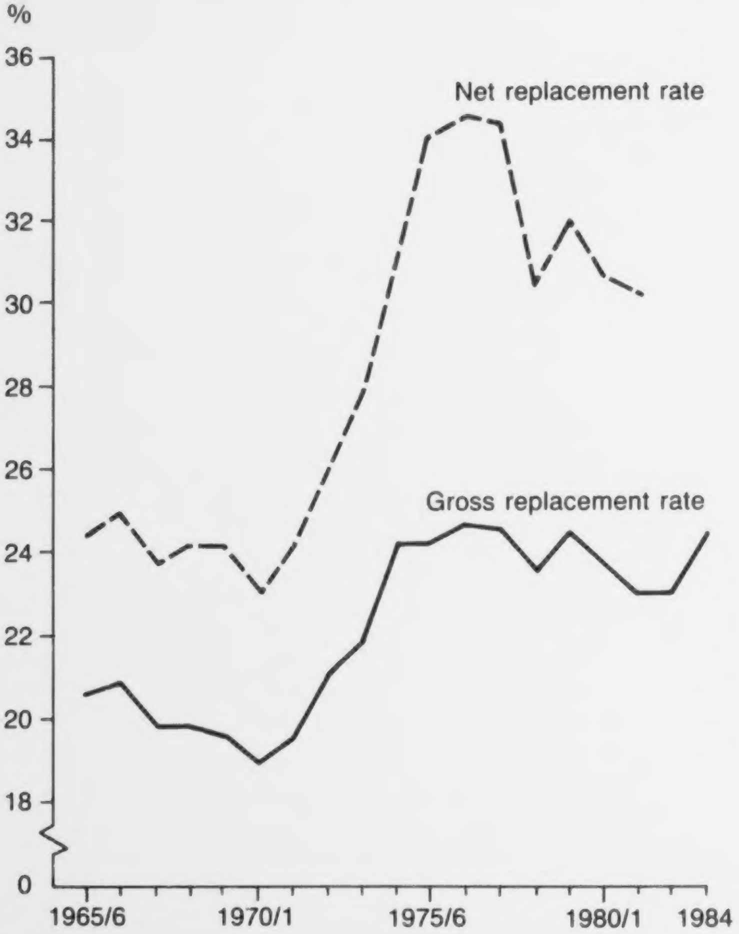

Figure 4. Pension replacement rates: Australia, 1965/6 to 1984
Sources: BLMR (1983:51); DSS (1985).

Note: The pension replacement rate is the ratio of the maximum value of the pension to average weekly earnings.

Occupational superannuation schemes

Occupational superannuation is optional in Australia and it is not available to all workers. Both employer and employee make contributions, which are not taxed like other forms of saving. Schemes are operated by private organizations and their conditions vary. The schemes enjoyed by some sectors of government workers are especially lucrative. The increased importance of occupational superannuation benefits as the major source of income among the aged (Table 5) has implications for levels of well-being in the

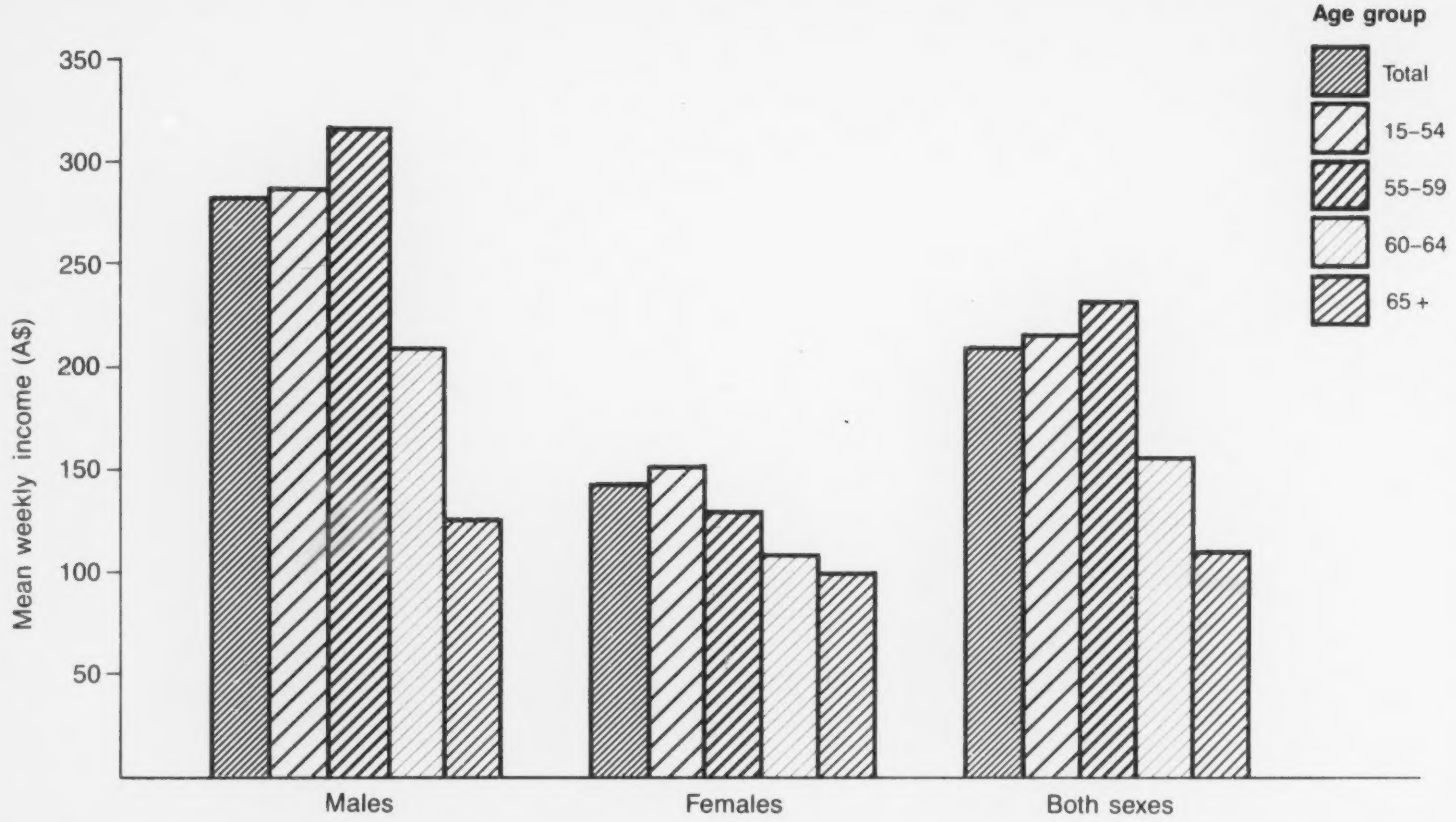

Figure 5. Mean weekly income of population, by age group: Australia, 1982
Source: ABS (1984b).

Table 5. Principal source of income for persons 65 years old and over in 1978/9 and 1981/2: Australia (%)

Principal source of income	1978/9	1981/2
Wage or salary	5.3	1.0
Own business	3.6	3.0
Government cash benefits (pensions)	78.6	79.9
Superannuation	4.6	10.6
Interest, dividends, etc.	6.5	4.8
Other	0.6	0.6
Total principal sources	100.0	100.0

Sources: ABS (1982b:35, 1984b).

older population. In recent years the coverage of occupational superannuation has expanded in Australia partly because of an increased awareness of its existence and ability of individual employees to take advantage of various tax concessions (D. Dixon and Foster 1982:3). The Australian Bureau of Statistics Income and Housing Survey of 1982 found that 45 percent of people working twenty hours or more per week were covered by some form of superannuation and another 7 percent had a life assurance policy with endowment payable on retirement (Hammond and Newton 1984:53). The survey also revealed the following trends:

- Coverage is highest in the prime earning years of 35–39 (61 percent for males, 32 percent of female workers).
- Among workers 60 years old and over 33 percent were covered (36 percent of males, 20 percent of females).
- Membership is more common in the higher earning groups.
- Sixty-nine percent of government employees are members compared with 39 percent of private employees and 30 percent of employers and self-employed groups.
- While coverage for women is lower, many working women would benefit from their husbands' entitlement if they were widowed.
- Some 303,000 people 60 or over had received a lump-sum superannuation payment since turning 50; they represented 14 percent of the total 60+ population, or around one-fifth of older-person households.

Evidence indicates membership of superannuation schemes is increasing. In 1974 the proportion of workers covered was less than 29 percent (BLMR 1983:54), less than two-thirds of the figure reported in 1982.

BEHAVIORAL CHANGES AMONG OLDER AUSTRALIANS

Each generation or cohort of older people has a distinctive composition having its origins in the unique set of circumstances that prevailed during the period when the cohort passed through crucial life stages. The Australian aged population of the year 2011 will differ considerably from the current aged population because it will have lived through vastly different events. For example, people in that cohort will have reached school-going age during the postwar expansion of education, which resulted in much higher proportions proceeding to later high school and tertiary education than had been the case with the cohorts moving into those ages in the 1920s, 1930s, and 1940s. Such factors will affect the extent to which cohorts are equipped to deal with the problems of old age and how they react to those problems.

Many of the characteristics and behavioral patterns of Australians entering the older age groups in the late 1970s and the 1980s have differed in important ways from those of earlier generations.[5] Examples of these differences are:

- More elderly people today are retiring from full-time work before the mandatory retirement age.
- More are living in their own homes longer.
- They are more likely to change their place of residence upon or during retirement.
- More have spent most of their working lives in a time of relative prosperity and have been able to accumulate assets.
- More have direct experience of places other than their community of residence through travel or ownership of holiday homes.
- More eligible persons are taking up the pension than ever before.
- More have other provisions for old age (superannuation, etc.).
- With each generation the average level of formal education is increasing.

The changing behavior of older people as new cohorts enter this stage of the life cycle has been little studied in Australia. It is reasonable to hypothesize, however, that the widening of eligibility criteria for social security and the increased social security benefits have been influential in modifying that behavior.

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[5] For a detailed discussion of the changing demographic, economic, and social characteristics of Australia's aged population see Hugo and Wood (1984).

Early retirement

One of the more significant changes among Australia's older population in recent years has been the dramatic reduction in work force participation by persons in the 60+ age group, and very recently declines have commenced in the late-50s age group. Table 6 shows that there has been a substantial reduction in work force participation among those in their late 50s, but most striking is the 41 percent decline in work force participation of persons 60-64. The change has been most dramatic among males; between the 1976 and 1981 censuses reductions in work force participation by men in the 55-59, 60-64, and 65+ age groups were 4, 14, and 4 percent respectively. The comparative reductions among women over the same period were only 2, 3, and 1 percent. Moreover, while male work force participation in those age groups declined consistently in the decade preceding the 1976 census, female participation increased steadily at the older ages during the entire postwar period up to 1976 (Hugo 1985). These trends are consistent with the pattern in the United States described by Waite (1981).

Although labor force participation rates among older males have been declining since 1961, the decline has been particularly dramatic since 1976 (BLMR 1983). A 1984 survey conducted by the Australian Bureau of Statistics (ABS 1985b) found that more than a fifth of males between ages 45 and 64 had retired before the generally applied mandatory retirement age[6] and that more than a half of those 60-64 had retired early (Table 7). The survey also asked persons who were currently working whether or not they intended to retire early, and the results (Table 8) suggest that the pattern of early retirement is likely to continue. Responses indicate that nearly 23 percent of workers under the retirement age have definite intentions of retiring early, whereas just over 25 percent are as yet undecided. What these findings suggest is that more than 40 percent of male workers between ages 45 and 64 and of the female workers between ages 45 and 59 will retire early, and it is highly probable that more than half of both sexes in those cohorts will retire early.

Voluntary early retirement

This trend toward early retirement has both voluntary and involuntary components. National surveys in many industrialized countries indicate that the major cause of early retirement is a deterioration of the worker's health. Results of a 1980 survey (reported in Table 9) suggest that poor health is also a major factor in early retirement in Australia. It has been argued (BLMR 1983:49), however, that poor health may be used as an excuse in some cases

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[6] The mandatory retirement age for Australian government employees is 65 for men and 60 for women. Most private-sector companies have followed this practice.

Table 6. Changes in the work force participation rates of the older population: Australia, 1969–84

Age group	% participation (males and females)					% change, 1969–84
	1969	1976	1978	1982	1984	
55–59	59.6	59.3	57.8	52.6	52.5	–11.9
60–64	46.1	40.8	35.3	28.1	27.3	–40.8
65+	11.8	8.8	6.8	5.3	4.6	–59.3

Sources: ABS Labor Force Surveys, Catalogue No. 6203.0.

Table 7. Persons 45 years old and over but below the mandatory retirement age who had retired from full-time work in 1984: Australia

Age group in 1984	Males		Females	
	Number (in thousands)	%	Number (in thousands)	%
45–49	24.7	6	230.2	59
50–54	39.3	10	253.5	70
55–59	80.9	21	294.8	81
60–64	184.6	59	na	na
Total age groups	329.5	22	778.5	70

Source: ABS (1985b:4).

Note: Includes some persons who had never worked full time.

na—not applicable. In Australia the retirement age for women is 60.

"as a result of invalidity pension requirements and the social acceptance of poor health as a reason for retirement." It is difficult to definitively separate the voluntary and nonvoluntary elements in the trend toward early retirement because we lack solid empirical data in this area, but it appears that voluntary factors have influenced more retirees than have nonvoluntary factors. The 1984 ABS survey of intending retirees (ABS 1985b) provides some evidence pointing in this direction. Table 10 shows that the search for more leisure time was overwhelmingly the main reason current workers gave for intending to retire early. If those responding that they had no financial need to work are included among those whose intention to retire early was voluntary, nearly three-quarters of those intending to retire early were motivated by voluntary considerations.

Of course, Tables 9 and 10 are not directly comparable because Table 9 deals with people who had already retired early and Table 10 with people still in the work force but who intended to retire early. Moreover, women were more strongly represented among the intendees than among the actually retired. Some persons intending early retirement for voluntary rea-

Table 8. Currently working persons 45 years old and over but below the mandatory retirement age who intended to retire before reaching the mandatory age: Australia, 1984

Retirement intention, sex, and age group	Number (in thousands)	%
Planning to retire early		
Males		
45-49	94.5	25
50-54	88.3	26
55-59	77.1	26
60-64	11.9	9
Total age groups	271.8	24
Females		
45-49	37.1	23
50-54	22.3	21
55-59	6.9	10
60-64	na	na
Total age groups	66.3	20
Both sexes		
45-49	131.6	25
50-54	110.6	25
55-59	84.0	22
60-64	11.9	9
Total age groups	338.1	23
Undecided (both sexes)		
45-49	159.9	30
50-54	112.9	25
55-59	78.0	21
60-64	21.8	17
Total age groups	372.6	25

Source: ABS (1985b:4).

na—not applicable. In Australia the retirement age for women is 60.

sons may develop health problems that compel early retirement. Thus Table 10 probably underestimates the proportion of respondents who will eventually retire for health reasons and overestimates the proportion who will retire for more leisure. Even allowing for the likely discrepancy between intended and actual cause of early retirement, however, Table 10 suggests that the voluntary element in early retirement is of major importance in Australia.

The Bureau of Labor Market Research has studied extensively the factors associated with the trend toward voluntary earlier retirement in Aus-

Table 9. Males 55–69 years old who retired at ages 50–64 from the full-time labor force, by age group and main reason for retiring: Australia, May 1980

	Age group[a] (%)			
Main reason for retiring	55–59	60–64	65–69	Total
Own ill health	81	58	58	62
No financial need to work	*	8	10	8
Decided not to work any more/wanted more leisure time	*	19	20	17
Family considerations	*	4	*	3
Could not get job because employers thought they were too old	0	4	0	3
Could not get job because no jobs were available/unable to work				
Too old	*	*	*	3
Other	*	4	*	3
Total reasons	100	100	100	100
Number (in thousands)	48.9	126.9	100.1	283.9

Source: ABS (1982b:30).

* Sample too small for estimation. a. At time of the survey.

tralia (BLMR 1983: chapter 7). Its findings and those of other researchers are summarized here.

The new generation of older people is likely to have discharged major debts such as home mortgages at an earlier age than previous generations (Hughes 1983). The reason is that this cohort lived through a period of comparative prosperity and of government-subsidized interest rates available to home buyers.

Significant shifts in leisure preferences and activity have occurred during the postwar period. One major trend has been the exponential increase in the number of people owning holiday homes in resort areas (Hugo 1986). Studies done during the 1970s showed that the rates of holiday-home ownership were especially high among people then in their 50s and that many intended to retire to those homes (Cook 1978; Hugo et al. 1981). Much of the migration of older persons to such former holiday homes is associated with early retirement.

An important factor in the increase in voluntary early retirement has been the changes in social security outlined in the previous section. Such commentators as Merrilees (1983) have argued that the increased availability and attractiveness of aged, invalid, service, wives', and widows' pensions undoubtedly have influenced the retirement decisions of many

Table 10. Persons 45 years old and over who intended to retire early from full-time work, by reason for intention: Australia, 1984

Reason for intention	Number (in thousands)	%
Ill health/injury	31.2	9
To give others a chance	11.2	3
No financial need to work	46.5	14
Decided not to work any more/want more leisure time	203.9	60
Too old	16.1	5
Family reasons	4.8	1
Employers think too old/no jobs available/ unable to get work	5.7	2
Other	20.5	6
Total reasons	340.0	100

Source: ABS (1985b:7).

Australians. The BLMR (1983:51) notes that the rise in the replacement rate of the pension (Figure 4) coincides with the fall in the labor force participation of older persons (Table 7). That the aged pension as such is available only for males at age 65 and for females at age 60 means that it could not be a factor in early retirement. Nevertheless, throughout the 1970s the proportion of males 60–64 who received invalidity pensions increased (Table 6), suggesting that among eligible people in the 60–64 age group the prospect of taking up an invalidity pension was more attractive in 1980 than in 1971. The definition of invalidity as having an 85 percent permanent incapacity for work remained unchanged over the entire period. In practice, however, it appears there was an easing of eligibility criteria in 1973 and 1976 and a crackdown in 1980 (Manning 1982:10). The major change (evident in Table 8), however, is in the proportions of males 60–64 receiving a service pension. Manning (1982:2) has summed up this argument as follows:

> . . . many workers aged 60 to 64 have weighed the attractions of a life of leisure on social security benefits against the wages and drudgery of their present job and have noticed that since 1975 the married rate of pension [that is, the rate for married persons] has been fairly steady around 38–39 per cent of average earnings. . . . Though men of this age are too young to gain the age pension, many of them in the present cohort fought in the second world war and are eligible for service pension[s] while others have known lurks [schemes] to gain an invalid [invalidity] pension.

A related factor in recent years has been the aging into their 60s of a high proportion of men who fought in World War II and hence are eligible

Table 11. Income status of males 60–64: Australia, 1971–82 (%)

	Employed			Receiving welfare					
Year	Full time	Part time	Total	Service pension	Invalidity pension	Unemployment benefits	Total	Other	Grand total
1971	72	4	76	4	7	0	12	12	100
1972	71	5	76	4	8	1	13	11	100
1973	69	4	74	6	10	1	16	10	100
1974	66	4	70	7	10	1	18	12	100
1975	61	4	65	8	11	2	21	15	100
1976	57	4	61	10	12	2	24	15	100
1977	54	5	58	12	13	2	27	15	100
1978	52	5	57	15	14	2	31	12	100
1979	48	4	52	17	15	2	34	14	100
1980	43	5	48	20	15	2	37	15	100
1981	45	4	50	21	14	2	37	13	100
1982	41	4	46	22	13	2	38	17	100

Source: BLMR (1983:42).

for full pension benefits at age 60 rather than age 65 (see Exhibit). This cohort effect has contributed to the trend toward early retirement as is evidenced in Table 11, which shows that the proportion of males 60–64 on service pensions increased more than fivefold over the 1971–82 period. As the BLMR (1983:42) points out, this increase is the result of not only a cohort effect but also a substantial increase in the take-up rates among those eligible for a service pension because of their war experience. Table 12 shows that take-up rates more than trebled among the 60–64 age group between 1971 and 1982, indicating a major behavioral change among eligible persons in that age group. The pattern suggests that, other things being equal, a reversal of the trend toward early retirement can be expected as the numbers of World War II veterans in cohorts entering their 60s decline over time.

Another element in early retirement has been the increased participation in occupational superannuation schemes, noted earlier. Superannuation should be considered with social security because the tax exemption that it receives means in effect that the government contributes substantially, if indirectly, to it (Rath 1983). Such schemes are especially important because "members of a scheme have a form of non-wage income available to them before the age of 65 for males and 60 for females" (BLMR 1983:53). This option is not equitably available across all socioeconomic groups, membership in superannuation schemes being very limited among low-income groups, manual workers, and women. Some authors have questioned whether superannuation entitlements have any more than a minor role in

Table 12. Proportion of eligible males receiving the service pension, by age group: Australia, 1971–82 (%)

Year	55–59	60–64	65+
1971	3	17	49
1972	3	18	48
1973	3	24	52
1974	3	27	58
1975	4	29	61
1976	4	35	65
1977	5	39	67
1978	6	43	66
1979	6	47	69
1980	9	52	67
1981	10	53	67
1982	10	55	77

Source: BLMR (1983:43).

encouraging early retirement (Manning 1982:12; Stricker and Sheehan 1981:186). However, a 1980 national survey of men between ages 50 and 69 showed that among those still working a higher proportion of those with superannuation than of those without intended to retire early (Manning 1982). More recently the national survey that found that nearly a quarter of current workers 45 and over and below the mandatory retirement age intended to retire early also found that among this group superannuation was the anticipated major source of income upon retirement. Table 13 shows that over 40 percent of people anticipating retirement believed that superannuation would be their major income source upon retirement. This was twice the proportion who anticipated receiving a government pension or benefit under the invalid, widow, or returned serviceperson schemes. Increased participation in superannuation schemes is thus playing a role in facilitating early retirement in Australia. Further evidence of the effect of superannuation on early retirement is found in data about the sources of income for the group influenced most by early retirement—males 60–64. Pointing to three Australian Bureau of Statistics income surveys (1968/9, 1973/4, and 1978/9), which showed no increase in the percentage of men 60–64 depending on superannuation annuities as their principal source of income, Merrilees (1983) has suggested that superannuation has little effect on early retirement. Table 14, however, presents the results of the latest ABS income survey (1981/2) and shows a quadrupling of both the numbers and the proportions of men 60–64 whose principal source of income was superannuation since the previous survey three years before.

Table 13. Persons 45 years old and over who intended to retire from full-time work early, by expected main source of income at retirement: Australia, 1984

Expected main source	Number (in thousands)	%
Superannuation	137.1	40
Life assurance and other schemes	4.6	1
Government pensions and benefits	71.2	21
Investments	55.4	16
Savings/sales of assets	12.3	4
Part-time work	12.9	4
Another person	33.5	10
Other (including "Don't know")	13.1	4
Total sources	340.0	100

Source: ABS (1985b).

Nonvoluntary early retirement

As for nonvoluntary early retirement, the explanation for its occurrence is based predominantly on the "discouraged worker" hypothesis (BLMR 1983:48). Related explanations include the following arguments:

- Older people's lower levels of education, the long time since they were trained, their lesser flexibility in responding to changes in the labor market, and their more limited mobility have meant that they have been hit harder than many groups by job losses associated with the country's economic recession and the structural shifts that have occurred in the Australian economy in recent years.
- BLMR statistics (1983:61) have revealed a concentration of older workers in declining industries (agriculture, manufacturing, and construction) that are experiencing considerable net losses of employment.
- The increased prevalence of early retirement schemes in industry may be placing pressure on older workers to retire early.
- Older workers who are unemployed find it harder to obtain employment than younger workers and may become discouraged and retire early.
- Manning (1982:3) suggests that the discouraged worker effect can cause such stress among the workers whose careers are prematurely and involuntarily terminated that they become ill enough to qualify for the invalidity pension.

Thus the trend toward early retirement in Australia has a substantial involuntary component. As the BLMR (1983:6) concludes from its detailed

Table 14. Principal source of income for males 60–64 years old in 1978/9 and 1981/2: Australia

	1978/9		1981/2	
Source of income	Number	%	Number	%
Wage/salary	156,100	29	128,300	21
Own business	22,000	4	47,400	8
Share partnership	33,100	6	0	0
Government cash benefits	252,700	46	321,300	53
Superannuation	17,400	3	77,800	13
Interest, dividends, etc.	55,900	10	30,500	5
Other	7,000	1	5,600	1
Total sources	544,200	100	610,900	100

Sources: ABS (1982b; 1984b).

study, "Evidence suggests that the size of the discouraged worker effect is such that unemployment at older ages may be many times greater than the recorded unemployment rate." Stricker and Sheehan (1981) have estimated that in 1979 nearly a third of all retired men in the 60–64 age group were "hidden unemployed" who would have remained in the work force had full employment been available to them.

Both the voluntary and the involuntary explanations for early retirement in Australia have validity (Hughes 1983; Manning 1982:11). Commentators vary in the importance they attach to each, Merrilees (1983) and Stricker and Sheehan (1981) representing the two extremes and the BLMR (1983) and Manning (1982) falling in between. Manning (1982:30), for example, concludes that "the effect of the recession has ranked equal to or stronger than the other factors which have been suggested." More recently available data presented here, however, suggest that the emphasis is now the other way around.

It is noteworthy that the voluntary and involuntary early retirees tend to be drawn from quite different groups. The voluntary retirees are likely to be drawn from the more highly paid occupations and to have superannuation and accumulated assets that allow them to pursue leisure-related activities. As a blatant example, the media recently revealed that, according to the Department of Social Security, twelve millionaires were receiving the aged pension. In contrast, involuntary retirees tend to be drawn from less well-paying occupations—especially from industries influenced by the recession and structural change, such as manufacturing—and to have less financial backup even if they are eligible for a pension on the basis of invalidity or service in the armed forces. But to characterize early retirement as being dominated by asset-rich recipients of substantial superannuation payouts is to distort the situation. Many workers who retire early do so reluctantly, and to them the description of a new comfortable, healthy, leisure-oriented "young-old" class so often associated with early retirement does not apply.

Increased population mobility

Besides early retirement, other behavioral changes among the older population have been associated with the changing social security situation in recent years. Among those changes is increased population mobility. There has been rapid growth of retirement communities in resort areas, especially in coastal locations outside the boundaries but near the major cities (Hugo and Wood 1984). Similarly, within the major cities retirement villages and housing specifically targeted for the older population have proliferated (Armstrong 1984). These developments have produced the common view that the elderly—traditionally the least residentially mobile age group in the Australian population (Rowland 1983)—are moving in greater numbers. Unfortunately, the limited age-specific migration data available in Australia make it difficult to assess whether or not this is the case.

A migration question was included in the 1971 Australian census for the first time, so that we do not have substantial time-series information on mobility rates. The government conducts an annual internal migration survey of a multistage area sample of two-thirds of 1 percent of the national population, and the mobility rates derived from surveys taken between 1970 and 1984 are shown in Table 15. The annual mobility rates for the older ages show substantial fluctuations from year to year, which undoubtedly reflect the relatively small numbers of older persons detected and the limitations of the sampling procedure.[7]

Some indication of an increase in residential mobility among the older population is provided by comparing five-year migration data from the 1971 and 1981 censuses. Table 16 shows a small but significant increase in the proportion of persons in their late 50s and early 60s whose place of residence five years preceding the census had been different. These data are undoubtedly more reliable than those from the national migration survey and suggest that a substantial increase had occurred in the residential mobility of people in the retirement ages. Casual observation would suggest

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[7] Cluster or block sampling techniques such as those used in the Australian Internal Migration Survey are notoriously poor in detecting spatially concentrated phenomena, especially among small subgroups of the population. In this case not only are the aged spatially concentrated, but also aged persons who had moved in the last year are concentrated within particular localities. The wide annual fluctuations of aged annual mobility rates shown in Table 15 confirm the unreliability of the survey data in measuring trends in mobility rates among the aged.

Table 15. Mobility rates, by age group: Australia, 1970–84

Year	15–19	20–24	25–34	35–44	45–54	55–64	65+	Total
1970	170	351	238	113	78	68	60	154
1971	172	364	229	118	79	74	62	156
1972	168	368	231	118	77	69	55	156
1973	177	389	266	137	85	81	77	175
1974	192	375	256	140	87	78	64	172
1977	167	377	250	123	82	60	55	162
1978	183	386	240	123	81	72	59	165
1979	173	370	233	123	84	67	55	160
1980	179	380	254	125	80	68	59	167
1981	183	368	250	129	90	80	59	168
1982	184	360	287	123	80	62	50	160
1983	167	366	237	119	80	57	46	154
1984	183	356	259	140	86	74	48	168

Sources: Cook (1980:1); ABS Internal Migration Surveys, Catalogue No. 3408.0.
Note: The mobility rate is the number of movers per year per 1,000 persons.

Table 16. Five-year migration rates of older persons documented by the 1971 and 1981 censuses, by age group: Australia

	% at different place of residence five years earlier		
Age group	1971	1981	Difference
55–59	23.1	24.5	+1.4
60–64	23.2	24.8	+1.6
65–69	23.4	23.7	+0.3
70+	23.4	23.5	+0.1
Total persons 55+	39.4	42.9	+3.5

Sources: ABS (1971, 1981: unpublished data).

that this tendency has accelerated in the four years since the 1981 census, and for that reason migration data from the 1986 census will be eagerly awaited. In sum, Australia appears to be moving toward levels of aged population movement found in the United States. A comparison of age-specific mobility rates between Australia and the United States, Great Britain, and Japan showed that around 1970 only the U.S. older population had higher levels of mobility, 8.4 percent moving annually there compared with 6 percent in Australia (Long and Boertlein 1976:9). The U.S. level was also higher in the more mobile 55–64 age group (9 percent compared with 6.8 percent).

According to the 1981 Australian census, migration was deemed to have occurred if a person's permanent place of residence on 30 June 1981 was different from that one or five years previously. This definition, however, excludes another important element in the mobility of the older population: temporary, often seasonal, migrations. The elderly are not tied to a single place of residence by employment considerations and can spend substantial periods of the year at a second place. In the United States there is considerable evidence of this form of bilocality among the aged, especially with the "snowbirding" of older people from the winters of the Northeast and Midwest to the sunbelt states of Florida, Arizona, etc. (Krout 1982; Sullivan and Stevens 1982). In Australia, despite fewer detailed case studies, it is clear that such seasonal movements occur, especially from the southern states northward to Queensland. Hence at the 1981 census Queensland had some 66,000 persons who were not at their permanent place of residence (3 percent of the total population), whereas Victoria had 86,000 absentees (2.2 percent of the total population). The census revealed considerable variation between age groups in the proportion of persons who were not at their usual place of residence. It can be seen in Table 17 that two groups were disproportionately represented among visitors, young adults and the older, retired segment of the population. Much of this temporary mobility of the older population appears to conform to the pattern of "snowbirding" in the United States. It differs from more permanent movements in that the majority of moves are nonlocal and many are interstate.

Table 18 shows substantial variation among the states in the proportions of older persons not at their normal place of residence on the night of the census. Most prominent are the high proportions in all older age groups in Queensland. Queensland had high proportions of people of all ages absent from their usual place of residence on the night of the census because the data of the 1981 census fell within a Queensland school vacation period (Barker and Reinders 1983:4). This coincidence could hardly have had a major impact upon the older population, however, nor does it explain the interstate variations shown in Table 18.

The presence in Queensland of some 60,700 visitors (13.6 percent of the total) who were 55 years old or older on the night of the census reflects the seasonal northward movement of older persons from the winter chills of the south. That movement is reflected also in the low incidence of census-night "visiting" among the older population of the southeastern states (especially Victoria), indicated in Table 19. It should be noted that a greater proportion of older persons were not at their usual place of residence on the night of the census than were classified as having migrated during the last twelve months.

Seasonal mobility of the aged has been neglected in studies of the aged in Australia. However, it is occurring on an increasing scale and is of importance for several reasons. First, it may produce quite substantial seasonal

Table 17. Percentage of persons, by age group and sex, not at their usual place of residence on the night of the census: Australia, 1981

Age group	Males	Females
0–4	4.2	4.7
5–9	4.2	3.9
10–14	4.2	4.7
15–19	7.1[a]	6.1[a]
20–24	8.9[a]	8.0[a]
25–29	7.7[a]	5.6[a]
30–34	6.7[a]	5.1
35–39	6.2[a]	3.8
40–44	5.3	3.4
45–49	5.5	4.0
50–54	5.1	4.3
55–59	5.4	5.5[a]
60–64	6.6[a]	6.9[a]
65–69	7.5[a]	7.6[a]
70–74	7.4[a]	8.1[a]
75+	6.3[a]	8.2[a]
Total age groups	6.1	5.5

Source: ABS, 1981 census, One Percent Sample of Persons.

a. Above the average percentage for all age groups.

Table 18. Percentage of older persons, by state and age group, not at their usual place of residence on the night of the census: Australia, 1981

State	55–59	60–64	65–69	70–74	75+
New South Wales	5.5	6.6	6.8	7.5[a]	7.8[a]
Victoria	3.7	4.1	4.7	3.4	5.7
Queensland	13.2[a]	12.6[a]	16.1[a]	15.6[a]	11.4[a]
South Australia	4.5	3.1	4.8	4.6	5.9
Western Australia	8.4[a]	8.1[a]	5.9	6.3	5.8
Tasmania	5.9	4.8	5.9	*	8.1
Total states	6.4	7.0	7.8	7.3	7.6

Source: ABS, 1981 census, One Percent Sample of Persons.

Note: Territories excluded because sample too small for estimation.

* Sample too small for estimation.

a. Above the average percentage for that age group.

Table 19. Age distribution of holiday home owners in a sample survey conducted in 1981: Port Elliot and Goolwa District Council (N = 150)

Age group	% of holiday home owners
≤34	4
35–39	6
40–44	9
45–49	12
50–54	24
55–59	18
60–64	12
65–69	6
70–74	4
75+	4

Source: Hugo (1981:26).

shifts in demand for various goods and services for the aged population in the areas of both origin and destination. Second, it may be the first stage of a move that ultimately becomes permanent. Or it may constitute a compromise between moving permanently and staying permanently at the place of origin, permitting the "snowbird" to maximize benefits at both origin (maintenance of links with family, friends, and relatives) and destination (escaping the cold climate, enjoying the climatic and recreational resources of a resort area). More investigation of this form of mobility is needed from census sources and detailed field surveys.

The increase in temporary mobility among the aged in Australia over the last decade is associated with several developments, some of which have been discussed above. These developments include the following:

- The economic position of many among the retired population is better than that of their predecessors. Their working years occurred during a period of economic prosperity that allowed them to accumulate assets, high levels of superannuation coverage, and increased social security coverage and value. In this context it should be noted that in Australia all pensions and superannuation payments are completely portable.
- The lower age at retirement means that many people have not only the means to pursue leisure activities away from their usual place of residence but also the health to do so. As shown earlier, the chief reason people stated for planning early retirement is to increase their leisure activity. In many cases this would involve some form of seasonal migration.

- Today's retirees have traveled more widely and had greater experience of other places than earlier generations owing to the revolution in transport technology, widespread access to that technology, and the growth of tourism in postwar Australia. Thus they have much more knowledge of alternative places for recreation and leisure.
- The generally higher levels of residential mobility have meant that it has become more common for a retiree's children to live a considerable distance from their parental home. There is evidence (e.g., Downie 1980) that many elderly people move in order to live closer to their children and grandchildren.
- The current generation of older people is much more likely than the last to own a second or holiday home at a resort area. Table 19 shows a typical age distribution of holiday home owners in a coastal resort area near the Adelaide Metropolitan Area and the predominance of persons in their 50s and early 60s.[8] The 1981 census recorded only 113,911 unoccupied dwellings classified as holiday homes (2.44 for each 100 occupied private dwellings). Since the actual number of second homes is much larger,[9] the potential number of retirees engaging in extended temporary moves to holiday homes is considerable.

Consideration here of more permanent migration among the aged will be brief because it is dealt with in detail elsewhere (Hugo and Wood 1984). It can be seen from Table 15 that mobility rates for the young-old population are similar to those for the old-old. The two groups generally move for different reasons, however. Among the young-old most movement tends to be voluntary and occurs disproportionately among the better-off. Its main influences are recreational opportunities, climate, and other environmental considerations; unforced housing adjustments such as a desire to be closer to relatives, friends, or to move to what is perceived as more appropriate types of housing (e.g., from houses to flats or units); and forced housing adjustments—for example, the necessity of trading down in the housing market because of lower income. Among the old-old, in contrast, the moves are less voluntary and more are influenced by widowhood or onset of disability and chronic illness requiring an adjustment in location or type of housing.

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[8] Several other studies confirm this pattern (e.g., Cook 1978).

[9] The Australian census does not collect direct data on holiday homes. In recent years, however, it has detected a large number of unoccupied dwellings (Hugo 1986: chapter 7). The unoccupied private dwelling category includes all structures built specifically for living purposes and capable of being lived in but not occupied on the night of the census (30 June). The census is collected on a de facto basis, and dwellings can be classified as vacant because they are newly completed, awaiting demolition or repair, to let, simply vacant on the night of the census, or holiday homes. Holiday homes have been differentiated from other unoccupied dwellings only since the 1961 census. Because individual enumerators have to categorize unoccupied dwellings, there is considerable scope for error. Moreover, it is likely that many holiday homes are occupied on the night of the census, although the timing of the census (in midwinter outside of public holiday periods) perhaps minimizes this likelihood in the southern states. The holiday-home data from the census therefore must be considered a substantial underestimate of the extent of second-home ownership in Australia.

It is apparent from Table 16 that the major increases in mobility have occurred among the young-old, thus suggesting that voluntary factors have assumed greater importance in recent years. Some evidence supports this hypothesis. The explanations presented earlier for the increase in temporary mobility hold equally for the increase in more permanent moves among the aged. In particular it appears that more and more older people who are comfortable economically and in good health are taking advantage of being able to live away from their former place of work. There can be no doubt that the search for a more congenial recreational and living environment has produced an increase in residential mobility among the aged. This mobility can occur among older people who are shifting from large urban areas to coastal suburban areas upon retirement (see, for example, Downie 1980; Rudd and Hugo 1984) or to nonmetropolitan resort areas (Prinsley et al. 1979; Murphy 1975). Table 20 shows that more than 10 percent of movers in 1984 who were in the early retirement and retirement age groups reported that retirement was the reason for their move. In contrast, retirement was a response so rarely given by respondents to the 1970 ABS Internal Migration Survey that it was not coded as a separate category of reason for moving (ABS 1974:12).

The patterns of internal migration among elderly persons in Australia recorded by the 1981 census, especially migration undertaken upon retirement, differ somewhat from those of the total population. They have been described in detail elsewhere and can be summarized as follows:

- Among interstate migrants (10.4 percent of movers 50–59 years old and 9.2 percent of movers 60+), the pattern is dominated by two cells in the origin–destination matrix—those of movement from New South Wales and from Victoria to Queensland, which account for one-third of all interstate moves. If the reciprocal flows are included, the proportion increases to 44 percent of all interstate movements of the age 60+ population. This northward movement of retirees to a more equable climate, a movement similar to that from the East Coast and Midwest of the United States to Florida and other southern states, is a well-known phenomenon.
- The major metropolitan areas of Sydney and Melbourne experienced net losses of the over-50s through net migration of 41,078 and 38,409 respec-

Table 20. Percentage of persons 15 years old and over who changed usual residence, by reason for moving: Australia, year ending 30 June 1984

Reason for moving	15–54	55–64	65+	Total age groups
Housing	59	56	57	58
Employment	20	11	0	19
Change in marital status	9	0	0	8
Retirement	0	12	11	1
Other	12	19	27	13

Source: ABS (1985a:12).

tively. The heaviest net losses in the 1960s were among the 60+ age group, whereas those during the 1970s tended to be among persons 50–59. This shift supports a hypothesis that much of the movement among the aged from capital cities occurs immediately upon or soon after retirement, and it has thus lowered the age groups of elderly movers between the 1960s and the 1970s as a result of the trend toward earlier retirement.

- Survey evidence suggests that this type of retirement migration is dominantly toward resort areas or places where the children of the retirees are living. Quite different patterns are observed in the capitals of the smaller states, where net migration gains of aged persons are prevalent. These gains are much less dominated by the young-old than are the Sydney and Melbourne losses—probably as a result of movement to the state capital city to take advantage of specialized medical, housing, and other services not available in nonmetropolitan locations.
- Another significant type of region characterized by migration of the aged is that "adjacent" to a major city. Such areas, where substantial net migration gains of retirees have been recorded, have long been favored by retirees seeking a more congenial nonmetropolitan environment but retaining access to the facilities, family, and friends in the city proper in which they previously lived and worked.
- Of particular significance has been migration of older persons to environmentally favored areas further away from the major cities, but still within the closely settled belt along the southeastern and eastern coasts. Net gains of older migrants, many of them substantial, are the norm in statistical divisions along the east coast, especially in Queensland and New South Wales. Although retirement migration to coastal areas is most striking, there also have been gains in some environmentally favored inland areas. For example, in Victoria several of the attractive centers, especially in the more mountainous areas and along the River Murray, have drawn

retirees. Wait (1979), for example, in a survey of retirees who had moved to Mildura, found that 35 percent came from Melbourne, 32 percent from elsewhere in the local region, and 24 percent from outside the state. The dominant reasons given for moving to the area were to join friends or relatives, better climate, and health.

- More remote nonresort areas of Australia, however, are still experiencing substantial net losses of older persons. Hence, although there are plenty of Australian equivalents (on a smaller scale) to the U.S. retirement migration to Florida, there are no equivalents to the desert resort retirement centers found in Arizona and Nevada. The sparsely settled, inland arid regions, with their dry farming and grazing, have little attraction for the aged. These regions are much more remote and isolated from large metropolitan centers than desert communities in Arizona and Nevada and are really comparable only in ecological setting.
- As for migration of the aged *within* large Australian cities, little detailed information is available, but the research that has been done has demonstrated that by far the most important component of growth of local aged populations is "aging in place" and that in most metropolitan local government areas net migration plays only a minor role in the growth of aged populations (Hugo, Rudd, and Downie 1984).

These patterns are reflected in Table 21, which shows the distribution of various types of move in Australia in 1984 by age of the movers. It shows an overrepresentation of movers in the early retirement years in the metropolitan to nonmetropolitan flows both within and between states. This pattern reflects the importance of movement of the older population to particular nonmetropolitan locations. Most of this movement is influenced by amenity, environmental, climatic, recreational, and leisure considerations, which have assumed greater importance with the increase in voluntary retirement. The behavioral changes that accompany voluntary retirement can be expected to increase in importance in the 1980s. Writing about the United States, Wiseman (1979:35) states that in the near future

> as a group the elderly are expected to be relatively more affluent and, therefore, more able to afford the financial costs of migration. They will have had more frequent travel and vacation experiences, have higher levels of educational attainment, and consequently will have greater awareness of relocation opportunities. Furthermore, their social networks will be more diffused regionally as a result of earlier migrations of their peers and family members.

This statement applies equally to Australia. As with early retirement, however, this is a behavioral change that favors higher income groups and does not impinge upon the poor.

Table 21. Persons 15 years old and over who changed their usual residence, by type of move and age group: Australia, year ending 30 June 1984 (%)

Type of move	15–54	55–64	65+	Total age groups
Intrastate				
Within metropolitan areas	53.9	53.3	52.0	53.8
Within nonmetropolitan areas	31.9	25.0	26.7	28.6
From metropolitan to nonmetropolitan areas	4.6	7.9	4.4	4.8
From nonmetropolitan to metropolitan areas	4.1	4.9	3.8	4.2
Interstate				
Between metropolitan areas	3.6	2.8	4.7	3.5
Between nonmetropolitan areas	1.6	*	*	1.6
From metropolitan to nonmetropolitan areas	1.7	3.3	5.4	1.9
From nonmetropolitan to metropolitan areas	1.6	*	*	1.6

Source: ABS (1985a:16).

* Sample too small for estimation.

Housing

Little space remains to examine changes in housing patterns among the older population in Australia during the last decade. These changes have been considered in detail elsewhere (Hugo and Wood 1984). Today there is considerable debate and concern in Australia about the lack of intermediate accommodation available to the aged between two extremes: the detached three-bedroom house in which the aged originally raised their children, and some form of institution. Government expenditure has been overwhelmingly on institutional care, which in 1982/3 accounted for $886 million of Commonwealth government expenditure, while only $77 million was allocated to home care and domiciliary services designed to assist aged people to live independently as long as possible (Parliament of the Commonwealth of Australia 1982). Considerable pressure is now being exerted to redress this imbalance, and it is reflected in Table 22, which shows that Commonwealth government expenditure on all home-based programs increased by 38 percent between 1983/4 and 1984/5.

Proportionately more older people are adjusting their housing to the particular circumstances of old age than has been the case in the past. As

Table 22. Recent trends in Commonwealth expenditure on home and community care programs: Australia

Type of expenditure	Australian dollars (in millions) 1983/4	Australian dollars (in millions) 1984/5
Home and community care program[a]	na	10.0
Home help for veterans	na	1.9
States Grants (Home Care) Act[b]	24.9	33.7
Home help	na	na
Senior citizens' centers	3.9	7.0
Welfare officers	2.7	3.0
Grants for home care in the Northern Territory and the Australian Capital Territory[b]	0.2	0.7
Delivered meals subsidy[b]	5.6	6.8
Home nursing subsidy[b]	22.8	27.1
States Grants (Paramedical Services) Act[b]	1.4	1.5
Subtotal	61.5	91.8
Domiciliary nursing care benefit	25.9	28.9
Total	87.4	120.7

Source: Joint press statement of ministers for Social Security, Health, and Veterans' Affairs, 21 August 1984.

na—not applicable because program did not exist in that year.

a. The Commonwealth commitment over the three years 1984/5 to 1986/7 is estimated to be in excess of $300 million, including 1984/5 funding of programs expected to be replaced by the new program.

b. Currently envisaged as being incorporated within the new Home and Community Care Programme.

Table 20 shows, a large proportion of aged movers became movers for housing-adjustment reasons. Older people have greater variety in their living arrangements than any other major life-cycle group in the population (Hugo and Wood 1984). This variety is reflected in the types of housing structures that they occupy. In addition to the increased incidence of institutionalization with old age there is, as Table 23 shows, a tendency for old people to move from a separate house, the dominant type of structure, to a flat (apartment). This tendency has become more pronounced over the last two decades. Table 23 indicates that, among older household heads residing in private dwellings, since the 1966 census the proportion living in separate houses has declined, while the percentage in flats has increased. The reasons are fairly clear: Family size is reduced as couples enter the "empty nest" stage of the life cycle, the elderly have a reduced physical capacity to maintain large dwellings, and, in some cases, their reduced financial circumstances lead them to "trade down" in housing.

Table 23. Changes in types of dwelling among household heads 55–64 and 65+ years old residing in private dwellings: Australia, 1966–81

Type of dwelling	Ages 55–64			Ages 65+			Both age groups		
	1966	1976	1981[a]	1966	1976	1981[a]	1966	1976	1981[a]
House	87	82	84	84	76	76	85	79	80
Flat	10	16	16	12	22	24	11	19	19
Other	3	2	0	4	2	0	4	2	1

Sources: Kendig (1982:23); ABS, 1981 census, One Percent Sample of Households.

a. Data for 1981 are derived from the One Percent Sample of Households, not the complete census count, and hence are subject to sampling error.

Part of the change in types of dwelling among older household heads, depicted in Table 23, is due to the public housing authorities. For example, over the period between 1977/8 and 1982/3 the proportion of the South Australian Housing Trust's (SAHT) dwelling starts that were made up of cottage flats for rental to older people increased from nearly 4 percent (71 out of 1,871) to 35 percent (773 out of 2,175). Approximately 60 percent of all cottage flats are let to existing SAHT tenants who move to them from larger family-type houses. Between 1977 and 1984 applications to the SAHT from aged persons increased by 166 percent, more than twice the overall increase in applications of 74 percent. Nevertheless, in 1983 the average waiting time for cottage flats was three years and two months (Bethune 1983).

The private sector has also been active in the housing industry but has concentrated overwhelmingly on the upper end of the socioeconomic spectrum. Its market is seen to consist of early retirees with substantial savings, superannuation, and cash from sale of the family house. The proliferation of retirement villages and small groups of units and apartments for older people is not well documented (Armstrong 1984), but it represents a major behavioral shift in housing preferences among the Australian aged population that has been influenced by the improved economic situation of a substantial section of the retiring population and by the phenomenon of early retirement.

AGING AND GOVERNMENT SPENDING

The most recently available Australian Bureau of Statistics projections suggest that there will be an additional 1 million Australians of pensionable age (males 65+ and females 60+) by the year 2001 and that almost another 2 million will be added in the subsequent two decades. By the year 2021 the pensionable group's proportion of the total population is projected to be between 17.5 and 18.6 percent, depending on the fertility, mortality, and net immigration assumptions used, compared with the 1981 figure of 11.9

percent. The extra demands that pensions alone are going to place on government resources can be appreciated when it is considered that in 1981 some 77 percent of persons eligible by age actually were receiving a pension.

The rapid growth of the aged population will also place great demands on public spending in other areas—especially health. Elsewhere (Hugo 1984) social and economic implications of the growth of the aged population are traced. Assuming that the 1977/8 incidence of chronic health conditions among the elderly will apply over the next three decades and that the most recent ABS population projections will hold, Table 24 shows the likely pattern of increase in numbers of people suffering from chronic conditions. More than 1 million older Australians had chronic conditions in 1981, and 207,400 of them had conditions that confined them to bed or the home. The projections suggest that their numbers will increase by 84 percent over the next three decades while the total population grows by only 38 percent. This huge projected increase in elderly people suffering from chronic illness is a function not only of the overall rapid growth of the aged population but also of a shift in the distribution within the aged population that will result in a greater increase in the population 75 years old and over. The higher incidence of chronic illness among the 75+ group will exert even greater pressure on health delivery systems than expected from the overall increase in the 65+ population.

A 1981 ABS Survey of Handicapped Persons defined a handicap as a limitation in relation to five types of activity—self-care, mobility, communication, schooling, and employment. It found that of 1.3 million aged persons living in private households nearly 28 percent were handicapped to some degree, while of the 81,500 in institutions (handicapped persons' homes and hostels, hospitals, nursing homes, and retirement homes and villages) 89 percent were handicapped. In total one-third of all persons 65 years old and over had disabilities that restricted their daily activities. In 1981 some 450,900 persons 65 and over were handicapped, and this number is expected to nearly double over the next three decades (Table 24). The 1977/8 Australian Health Survey (ABS 1981) confirmed that aged persons consult a doctor more frequently on average than people in other age groups: Slightly more than 30 percent of aged persons had consulted a doctor in the two weeks preceding the interview and 70 percent in the three months preceding the interview; the respective figures for the population under age 65 were slightly more than 16 and 45 percent. On average, persons 70 years old and over had received 11.5 medical services per year.

The aging of the Australian population raises a major policy question about the funding of health services. The data presented in Table 25 indicate the substantially greater costs of providing health care for the elderly. With the doubling of the 75+ population that appears certain to occur within

Table 24. Projected increases in the number of aged persons with chronic health conditions, limiting chronic conditions, and handicaps, by age group: Australia, 1981–2011 (in thousands)

Types of condition	65–69	70–74	75+	Total 65+
Chronic conditions				
1981	391.4	317.2	424.2	1,132.8
1991	478.9	397.5	630.6	1,507.0
2001	465.1	473.2	838.8	1,777.1
2011	633.3	509.9	927.0	2,070.2
% change, 1981–2011		+82.8		
Limiting chronic conditions				
1981	32.2	33.3	141.7	207.2
1991	39.4	41.8	210.7	291.9
2001	38.2	49.7	280.3	368.2
2011	52.0	53.6	309.8	415.4
% change, 1981–2011		+100.5		
Handicaps				
1981	114.2	106.3	230.4	450.9
1991	139.7	133.3	342.2	615.2
2001	135.7	158.8	455.2	749.7
2011	184.8	171.0	503.1	858.9
% change, 1981–2011		+90.5		
% change in total population, 1981–2001		+26.8		

Source: Hugo (1984).

Notes: Projections are based on assumed net migration gain of 75,000 persons per annum (ABS 1985c: Series A & B). Incidence of chronic conditions and handicaps is based on 1977/8 and 1981 surveys conducted by ABS and assumed to remain constant throughout the projection period.

the next three decades the pressure on health costs is going to be great.

Although the ratio of aged to non-aged persons is substantially more favorable in Australia than in most other developed nations, the current public costs of providing for the aged are immense. Rath (1983:61) has estimated that in 1983 some A$8–9 billion was spent on retirement income for the aged. This included $4.6 billion from the government in the form of age pensions, $500 million in government-financed occupational superannuation schemes, and $2–3 billion indirectly as revenue forgone by the Commonwealth government in the form of tax concessions for superannuation schemes. These costs do not include the expense of specialized hospital, medical, and housing assistance schemes for the aged. Rath (1983:62) estimates that if the public costs of supporting the aged increase at the same rate over the next four decades as they did over the last decade, the cost

Table 25. Estimated average hospital and community health expenditure per capita, by age group: Australia, 1981/2

Age group	Expenditure per capita (Australian dollars)	% of average for total population
0–15	$ 95	36
16–24	134	50
25–39	173	65
40–49	181	68
50–54	271	102
55–59	392	147
60–64	498	187
65–69	623	234
70–74	726	273
75+	1,825	686
Total population	266	100

Source: Social Welfare Policy Secretariat (1984).

in constant 1981/2 Australian dollars will be at least 10 times present costs—and over that time the number of Australians of working age available to pay the benefits for each aged person will decrease from 7 to 4.5. Although this projection is an exaggeration of the situation, it does point out the approaching crisis in public funding for support and services to the aged population, especially if current eligibility criteria are maintained.

The government's aim at present is to increase the pension to 30 percent of average weekly earnings. Yet if the increase were given to 85 percent of people of pension age as at present (Table 26), the proportion of the employed population's earnings that would have to be transferred to the aged would increase from 6.6 percent (the proportion in 1981) to 12.1 percent in the year 2030. Such a greatly increased taxation burden on the working population would be politically difficult to impose, and the government will be (and indeed is being) forced to look closely at the option of reducing the proportion of persons who receive the pension by raising the eligible age.

SUMMARY AND CONCLUSIONS

Australia's system of providing retirement income differs substantially from that in most other developed countries. It is a noncontributory, flat-rate, income-tested, pension system. It represents, however, only a part of public funding for the aged, which includes direct, substantial provision for health care, housing, and other fixed costs like utilities and also indirect support through revenue forgone in taxation concessions to superannua-

Table 26. Projected percentages of total employed population's earnings needed for age pension under pay-as-you-go system: Australia, 1981–2030

Year	Pension = 25% of weekly earnings		Pension = 30% of weekly earnings	
	Paid to 85% of pension-age persons	Paid to 70% of pension-age persons	Paid to 85% of pension-age persons	Paid to 70% of pension-age persons
1981	5.5	4.5	6.6	5.4
1991	6.1	5.1	7.4	6.1
2001	6.3	5.2	7.6	6.2
2011	7.2	5.9	8.6	7.1
2021	8.8	7.5	10.6	8.7
2030	10.1	8.3	12.1	10.0

Source: Rath (1983:62).

tion schemes. Historically, governmental provision for the aged in Australia has been intended largely to alleviate poverty among the aged. In recent years, however, the provision has been increased and extended to a much wider spectrum of the population. Moreover, the public has increasingly viewed the provision as a right earned by paying taxes during a working lifetime. The expanded provisions and services to the elderly have had an influence on patterns of early retirement, population movement, and housing among the aged. A substantial number of current pension recipients who are financially well off are receiving a disproportionate share of benefits because they receive superannuation as well as the government pension and other entitlements.

The demographic and economic outlook in Australia is such that pressure on public funding for provision of services for the aged will increase greatly over the coming decades. Faced with this pressure, the Australian government has the following options: to increase taxation revenue from the employed population, to freeze or reduce the base level of benefits, and to restrict eligibility for benefits. It is likely that taxpayers will resist major increases in budgeting outlays that maintaining the present pattern of provision will involve. Dixon and Thame (1984) have documented these likely increases. However, any freezing or reduction of the existing aged pension levels would enormously disadvantage those groups not receiving superannuation unless they had other sources of income or major assets such as a house. The current system has tended to move away from a needs principle and is in danger of becoming inequitable in its provisions.

Understanding of these issues has been slow in coming in Australia, and the electoral unpopularity of cutting back on eligibility for pensions and other benefits has militated against remedial action. Since 1983, however, the government has taken various initiatives in relation to the aged pension and occupational superannuation. These have included:

- the reintroduction of an income test for the age pension, which was previously available to all persons 70 years old and over (1983)
- the reintroduction of an assets test for the aged pension, which has affected some 50,000 pensioners (1985)
- the introduction of substantially higher taxes on lump-sum occupational superannuation payments (1983)
- the tightening of eligibility provisions for war-service pensions (1985)
- a ceiling since 1977 on the amount of additional money that pension recipients have been allowed to earn and still receive the pension

These measures produced a storm of protest, and subsequently the government backed off from fully enforcing several of them. Thus far the restrictions have affected only small numbers of older persons; but the government has strongly reaffirmed its intention to concentrate public resources on aged persons who are in need, and more restrictions on public provisions for the better-off elderly could follow. It is to be hoped that future restrictions will not take the form of an across-the-board freezing or reduction of services, which would greatly disadvantage elderly persons living in or near poverty. A preferable approach will involve greater emphasis on equity and provision on the basis of need; such an approach would inevitably involve some contraction of the eligibility criteria for benefits. It remains to be seen whether the recent restrictive initiatives and other possible future measures will modify further the behavioral patterns of the aged with respect to early retirement, population movement, and housing.

REFERENCES

Advisory Council for Intergovernment Relations (ACIR)

1983 *The Provision of Services for the Aged: A Report on Relations Among Governments in Australia*. Report 6. Canberra: Australian Government Publishing Service.

Armstrong, David

1984 The retirement village boom. *The Bulletin*, 12 June:37-41.

Australian Bureau of Statistics (ABS)

1974 *Internal Migration 1969–70 to 1972–73*. Reference No. 4.26. Canberra.

1981 *Survey of Handicapped Persons, Australia, February–May 1981*. Catalogue No. 4342.0. Canberra.

1982a *Australian Families, 1982 (Preliminary)*. ABS Publication No. 4407.0. Canberra.

1982b *Australia's Aged Population 1982*. Catalogue No. 4109.0. Canberra.

1982c *Estimated Resident Population by Sex and Age: States and Territories of Australia, June 1971 to June 1981*. Catalogue No. 3201.0. Canberra.

1982d *Projections of the Population of Australia, 1981 to 2021*. Catalogue No. 3204.0. Canberra.

1984a *Australian Health Survey, 1977–78*. Catalogue No. 4311.0. Canberra.

1984b *Income of Income Units, Australia 1981–82*. Catalogue No. 6523. Canberra.

1985a *Internal Migration, Australia, 12 months ended 30 June 1984*. Catalogue No. 3408.0. Canberra.

1985b *Persons Who Intended to Retire from Full-time Work, Australia, September 1984 (Preliminary)*. Catalogue No. 6257.0. Canberra.

1985c *Projections of the Populations of Australia, States and Territories 1984 to 2021*. Catalogue Number 3222.0. Canberra.

Barker, R.A., and J. Reinders

1983 *Analysis of the 1981 Census, Queensland*. Brisbane: Technical Division, Premier's Department.

Bethune, Graeme

1983 Implications of recent trends in population and housing formation for the public housing sector. Paper presented at Seminar on The Impact of Population Trends on Demand for Housing in South Australia, Organized by the Indicative Planning Council for the Housing Industry and the Australian Population Association (S.A. Branch), Adelaide, November.

Betts, Katherine

1984 Population policy in Australia. In Robert Birrell, Douglas Hill, and Jon Nevill, eds., *Populate and Perish? The Stresses of Population Growth in Australia*, pp. 47-79. Melbourne: Fontana, Sydney/Australian Conservation Foundation.

Borowski, Allan

1984 Towards defining an adequate retirement income. *Social Security Journal* June: 1-10.

Bureau of Labour Market Research (BLMR)

1983 *Retired, Unemployed or at Risk: Changes in the Australian Labour Market for Older Workers.* BLMR Research Report No. 4. Canberra: Australian Government Publishing Service.

Cook, Brian G.

1978 *The Distribution of Holiday Homes in South Australia 1961-1971.* Unpublished M.A. thesis, Flinders University, Adelaide.

1980 Migration patterns of the elderly. Paper presented at the Fifth Annual Meeting of the Regional Science Association, Australian and New Zealand Secton, Tanunda, South Australia.

Department of Immigration and Ethnic Affairs (DIEA)

1983 *Australia Population Forecasts for 1983-86 with Projections for Selected Years to 2021.* August. Canberra.

Department of Social Security (DSS)

1983 *Pocket Compendium of Income Security Statistics.* December Issue. Canberra: Statistics Section, Research and Statistics Branch, Development Division.

1984 *Retirement Income Provisions Overseas.* Research Paper No. 26, April. Canberra: Research and Statistics Branch, Development Division.

1985 *Pocket Compendium of Income Security Statistics*, December 1984 Issue. Canberra: Statistics Section, Research and Statistics Branch, Development Division.

Dixon, D.A., and C. Crompton

1983 Social welfare financing: Implications of an ageing population. Paper presented at the Australian Population Issues Seminar, Australian National University, Canberra, 18 August.

Dixon, D., and C. Foster

1982 *Alternative Strategies to Meet the Income Needs of the Aged.* Canberra: Social Welfare Policy Secretariat, Australian Government Publishing Service.

Dixon, Daryl, and Claudia Thame

1984 The relative costs to government of the young and the old. *The Australian Quarterly* 56(1):41-52.

Dixon, Daryl, and Chris White

1984 A long run assessment of Commonwealth income transfers to the aged. Mimeo., Social Welfare Policy Secretariat, Canberra.

Dixon, John

1981 The age pension: Developments from 1890 to 1978. In Anna L. Howe, ed., *Towards an Older Australia,* pp. 65-81. St. Lucia: University of Queensland Press.

Donald, Owen

1984 *Government Support of Retirement Incomes in Australia.* Research Paper No. 24, April. Canberra: Policy Review Branch, Development Division, Department of Social Security.

Downie, Malcolm C.

1980 The nature of the future demand for services by the elderly population of Noarlunga. Unpublished B.A. (Honors) thesis in Geography, Flinders University of South Australia, Adelaide.

Fink, Averil

1980 Economic security for the elderly in hard times. *Growing Older* 7(17):22-25.

Graycar, Adam

1981 Ageing in Australia: A pointer to political dilemmas. *The Australian Quarterly* 53(2):280-300.

Graycar, Adam, and David Kinnear

1981 *The Aged and the State.* SWRC Reports and Proceedings Working Paper No. 5. Sydney: Social Welfare Research Centre, University of New South Wales.

Hammond, Cheryl, and Jenni Newton

1984 *The Economic and Social Circumstances of the Aged.* Research Paper No. 25, April. Canberra: Research and Statistics Branch, Development Division, Department of Social Security.

Howe, Anna L. (editor)

1981 *Towards an Older Australia.* St. Lucia: University of Queensland Press.

Hugo, Graeme J.

1984 Projecting Australia's aged population: Problems and implications. *Journal of the Australian Population Association* 1:41–56.

1985 *Some Demographic Aspects of the Australian Workforce in the Early 1980s.* Working Paper Series, No. 70. Adelaide: National Institute of Labour Studies, Flinders University of South Australia.

1986 *Australia's Changing Population: Trends and Policy Implications.* Melbourne: Oxford University Press.

Hugo, Graeme J., Dianne M. Rudd, and Malcolm C. Downie

1984 Adelaide's aged population: Changing spatial patterns and their policy implications. *Urban Policy and Research* 2(2):17–25.

Hugo, Graeme, Dianne Rudd, Malcolm Downie, Anthony Macharper, and Anthony Shillabeer

1981 *A Demographic Profile of the South Coast Region of South Australia with Particular Emphasis on the Aged Population.* Adelaide: School of Social Sciences, Flinders University of South Australia.

Hugo, Graeme, and Deborah Wood

1984 *Ageing of the Australian Population: Changing Distribution and Characteristics of the Aged Population.* Working Paper Series, No. 63. Adelaide: National Institute of Labour Studies, Flinders University of South Australia.

Hughes, Barry

1983 Labour force participation: What are the issues? In A.J. Kaspura, ed., *Labour Force Participation in Australia: The Proceedings of a Conference.* Canberra: Australian Government Publishing Service.

Kendig, Hal L.

1982 *The Cumulation of Inequity: Housing in Old age.* Working Paper No. 28, Ageing and the Family Project. Canberra: Research School of Social Sciences, Australian National University.

Krout, John A.

1982 Seasonal migration of the elderly. Paper presented at the Annual Meeting of the Population Association of America, San Diego.

Long, Larry H., and Celia G. Boertlein

1976 *The Geographical Mobility of Americans.* Current Population Reports, Special Studies Series, P. 23, No. 64. Washington, D.C.: Bureau of the Census, U.S. Department of Commerce.

Manning, Ian

1982 Inducements to retire and early retirement among Australian men, 1971–81. Paper presented at the Conference of Economists, Adelaide, August.

Merrilees, W.J.

1983 Pension benefits and the decline in elderly male labour force participation. *Economic Record* 59:260–70.

Murphy, Peter A.

1975 Decision-making, interaction and distance in the market for resort land in New South Wales. Unpublished Ph.D. thesis, Macquarie University, Sydney.

Myers, George C.

1981 *Population and Public Welfare Policy in Australia*. Report to the Social Welfare Policy Secretariat, December 1980. Canberra: Australian Government Publishing Service.

Neugarten, Bernice L.

1974 Age groups in American society and the rise of the young-old. *Annals of the American Academy of Political and Social Science,* September:187–98.

Newton, Jenni

1981 *Population Projections and Social Security*. Research Paper No. 15, November. Canberra: Research and Statistics Branch, Development Division, Department of Social Security.

Palmer Trahair Owen and Whittle, Towers Perrin Forster and Crosby (PTOW/TPF & C)

1983 *Report to the Social Welfare Policy Secretariat on the Long Term Cost of the Age Pension*. Canberra: Commonwealth Government Printer.

Parliament of the Commonwealth of Australia

1982 *In a Home or at Home: Accommodation and Home Care for the Aged*. Report from the House of Representatives Standing Committee on Expenditure. Canberra: Australian Government Publishing Service.

Population Reference Bureau (PRB)

1983 *1983 World Population Data Sheet*. Washington, D.C.

1985 *1985 World Population Data Sheet*. Washington, D.C.

Prinsley, D.M., B. Kidd, A.L. Howe, and K. Cameron

1979 *The Experience of Retirement to Phillip Island and Its Impact on the Community.* Occasional Paper in Gerontology. Melbourne: National Research Institute for Gerontology and Geriatric Medicine, Melbourne University.

Rath, Pip

1983 The looming superannuation crisis. *The Bulletin,* 10 May:60–69.

Rowland, Donald T.

1982 A research response to ageing in Australia. *Australian Foreign Affairs Record* 53:12.

1983 Migration during the later life cycle. Paper presented at the Symposium on Migration in Australia organized by the Royal Geographical Society of Australia/Asia (Queensland Branch) and the Australian Population Association (Queensland Regional Group), Brisbane, 1–2 December.

Rudd, D.M., and G.J. Hugo

1984 *Willunga's Ageing Population: Implications for Current and Future Service Provision.* A Report on the Field Studies of Second and Third Year Students in the Social Geography Course, June 1983. Adelaide: School of Social Sciences, Flinders University of South Australia.

Schulz, James H.

1985 What mix of public/private financing? Some observations from the American experience. Mimeo., Department of Economics, University of Melbourne.

Social Welfare Policy Secretariat

1984 *The Impact of Population Changes on Social Expenditure: Projections from 1980–81 to 2021.* Canberra: Commonwealth Government Printer.

Stone, Leroy O., and Susan Fletcher

1980 *A Profile of Canada's Older Population.* Montreal: Institute for Research on Public Policy.

Stricker, P., and F. Sheehan

1981 *Hidden Unemployment: The Australian Experience.* Melbourne: Institute of Applied Economic and Social Research, University of Melbourne.

Sullivan, Deborah A., and Sylvia A. Stevens

1982 Snowbirds: Seasonal migrants to the sunbelt. Paper presented at the Annual Meeting of the Population Association of America, San Diego.

Wait, Sally

1979 Retirement migration: A case study of Mildura. Honors thesis, Monash University, Melbourne.

Waite, Linda J.

1981 U.S. women at work. *Population Bulletin* 36(2).

Wiseman, Robert F.

1979 Regional patterns of elderly concentration and migration. In Stephen M. Golant, ed., *Location and Environment of Elderly Population,* pp. 21-36. Washington, D.C.: V.H. Winston and Sons.

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Marriage and fertility in Tianjin, China: Fifty years of transition

Burton Pasternak

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PREFACE

This study is based on fieldwork conducted in Tianjin from September 1981 to January 1982. Although the data were collected in collaboration with Pan Naigu (Chinese Academy of Social Sciences) and Pan Yunkeng (Tianjin Academy of Social Sciences), and while Pan Naigu and Wang Ching (Beijing Food Research Bureau) assisted during various stages of data processing, I alone am responsible for the analysis of the data. I am grateful to Wang Ching and to Martin K. Whyte for suggestions offered on an earlier version of this manuscript. A debt of gratitude is due the Institute of Sociology, Chinese Academy of Social Sciences; the Tianjin Municipal Government; and the Tianjin Academy of Social Sciences for sponsorship and support in the field. Finally, I would like to thank the generous people of Red Sky who endured with patience and kindness my probing into their personal lives and history.

Fieldwork in Tianjin was conducted under grants of the Committee for Scholarly Communication with the People's Republic of China, and the National Science Foundation. Funds for various phases of the data analysis were provided by the National Science Foundation and by the Research Foundation of the City University of New York.

ABSTRACT This is a report of research conducted in Tianjin, People's Republic of China (September 1981 to January 1982), the objective of which was to describe and analyze changes in family structure, marriage, patterns of postmarital residence, and fertility in a neighborhood of factory workers, over a period of fifty years. The data, derived from a combination of interviews, questionnaires, and documentary research, indicate how demographic data can provide an objective indicator and measure of social and political change.

Many of the social and economic changes that took place during the modernization of presently developed societies also took place in Tianjin. Mortality quickly and precipitously declined, for example. Access to education greatly expanded and women were drawn into the labor force. Marriage and reproductive life were delayed and the young acquired greater control over, and responsibility for, the arrangement of their own marriages. Spouses more commonly moved away from their parents at marriage, and as a result families became simpler. In a purely economic sense raising children became more costly and less rewarding, and, as the theory of demographic transition would have us expect, fertility declined.

But modernization theory and the model of demographic transition do not anticipate the fertility transformations that actually occurred in Tianjin. Although most of the fertility-depressing correlates of modernization emerged and fertility did decline, the pattern of change indicates that fertility was at least as responsive to political shifts as to changes predictable simply on the basis of what occurred during the modernization of developed societies. The paper suggests that it may be more useful to begin with the demographic pattern, and to use it to signal potentially important economic, political, or social causes, than to begin with specific social changes, assuming that they invariably have a powerful and consistent effect on fertility.

Some results of China's 1982 census and national fertility survey have already appeared in Chinese and English, and scholars have begun to analyze the data available. The data upon which this analysis is based are, however, of a different sort. This is a report of research conducted in Tianjin (Tientsin)[1] municipality from September 1981 to January 1982. The study focused on the relationship between social forms and institutions on the one hand, and demographic behavior on the other. The more specific objective was to describe and analyze, diachronically, family structure and patterns of postmarital residence, marriage, and fertility in a neighborhood of factory workers. The study examined, over time, the way families have adjusted to a variety of constraints, such as those imposed by occupation, income, housing availability, natural disasters, political turmoil, and systematic family limitation.

---

[1] Pinyin romanization of Chinese placenames is used in this paper. The Wade-Giles equivalent normally appears in parentheses after the first mention of a place.

The data are derived from a combination of interviews, questionnaires, and documentary research. They are unusual in that they provide a small window through which to view change over a period of nearly fifty years in a single neighborhood of factory workers in Tianjin. The data are also unusual because they provide information about a segment of China's population about which little is known. Ethnographic data on urban Chinese families, either in mainland China or on Taiwan, are rare; this study is a beginning in determining what is and is not representative, how much variation there is, and how much change has taken place and why.

From simple, modest industrial beginnings in the 1920s and 1930s, Tianjin went on to become one of China's most important modern, industrial cities. The most dramatic development occurred after 1949, when industry flourished and expanded and population grew rapidly. A loose urban structure was replaced by one that was integrated to an unprecedented degree. Tianjin was no longer a temporary stopping place for desperate, impoverished males from the countryside, but rather the permanent home of people born and raised in the city. It became a city of families carefully organized into stable neighborhoods. What were the social, economic, and demographic correlates of this rapid modernization? Many of the changes that have taken place during the modernization of presently developed societies also took place in Tianjin. Mortality quickly and precipitously declined, for example. Access to education greatly expanded and women were drawn into the labor force. Marriage and reproductive life were delayed and young couples acquired greater control over, and responsibility for, the arrangement of their own marriages. Spouses more commonly moved away from their parents at marriage and, as a result, families became simpler. In a purely economic sense raising children became more costly and less rewarding, and, as the theory of demographic transition would have us expect, fertility declined.

On the other hand, the analysis reinforces the view that caution must be exercised in anticipating or interpreting changes in developing societies in terms of models based on the experience of already developed societies. While most of the fertility-depressing correlates of modernization emerged in Tianjin and while fertility did decline, the *pattern* of change suggests that fertility was at least as responsive to political shifts as to changes that are predictable simply on the basis of what occurred during the modernization of developed societies. We are often told that political, economic, and other policy shifts have had substantial social consequences in China. This paper will indicate how demographic data, in this particular case data on fertility, can provide an objective indicator and measure of social and political change.

METHODOLOGY

The study was based on fieldwork conducted in two neighborhoods of Tianjin. Because there are no objective standards with which to assess the typicality or atypicality of any Chinese urban neighborhood, it seemed worthwhile simply to document a case for later comparison. I selected a site not unusual in terms of income, education, population structure, and occupation, and then reconstructed patterns of marriage and fertility over a period of several decades through interviews and the use of questionnaires. I made a concerted effort to ensure a universe with social integrity in the sense that information gathered would refer to one or two *complete* neighborhoods. In the end I was able to include all households and individuals in a single neighborhood, Red Sky. Whenever I describe Red Sky as a "neighborhood," therefore, my observations are based on a universe rather than on a sample. In addition, because the cohort of women of ages 55 and over (women whose reproductive lives peaked before Liberation in 1949) was relatively small, I included all such women, along with their coresident daughters and daughters-in-law, who were living in an adjoining neighborhood. When my focus is on the characteristics of individuals rather than on the characteristics of the neighborhood, therefore, the inclusion of these people makes it possible to enlarge the data base.

From the outset, my research was seriously restricted because of a moratorium against anthropological and sociological fieldwork by foreigners that was then in effect in China. My presence was therefore a matter of considerable sensitivity and concern to Chinese sponsors at various levels. Although my hosts were finally persuaded to meet my sampling requirements, they found it necessary to limit my inquiry to items and procedures agreed upon from the outset, and to structure the conditions of my stay so as to severely limit contact with the people of Red Sky. I was housed in a dormitory at Tianjin University, on the other side of the city, and was driven to and from Red Sky each morning and evening. I was allowed to conduct research only on the condition that I not travel the city on bicycle. Lunch was sent to my office from a nearby restaurant that was off limits to me. I usually took dinner in my room.

These precautions were in part intended to ensure my comfort and safety, as my hosts saw it, and in part to limit my dealings with the general population. Contact was further constrained by a requirement that all interviews be conducted in an office provided by the local government. I was not to visit people in their homes except under special circumstances and with advance notice. These were hardly optimal conditions for anthropological inquiry but, because I had designed the project anticipating such restrictions and because my objectives were limited, the constraints within which I had to function, while frustrating, were not ruinous.

Upon my arrival in Tianjin, my hosts organized meetings at all administrative levels to permit me to explain my objectives, requirements, and procedures, and to elicit help. To achieve any measure of success I needed to ensure the support of personnel at each level and in each relevant work unit. I therefore made certain that everyone understood what I was doing, why I was doing it, and how I hoped to get the job done. After approving the project, local authorities instructed neighborhood representatives and small group leaders responsible for particular buildings to provide all assistance. In accordance with that mandate, neighborhood representatives scheduled interviews, and small group leaders delivered questionnaires.

I obtained information about the population in three ways. I interviewed all women of ages 55 and over. Before the interview each informant was asked to complete a questionnaire to familiarize her with the questions she would be asked during the interview and, if necessary, to enlist the help of others to fill memory gaps. Group leaders checked the questionnaires for completeness, paying special attention to anticipated problem areas. Questionnaires were delivered to me at least one day before each interview, providing a second opportunity to detect errors and omissions. I reviewed the questionnaires once again during the interviews, at which time each informant was asked to help complete a questionnaire for each daughter-in-law and married daughter living in Tianjin.

Informants unable to come to my office were visited and interviewed in their apartments. A few people refused to be interviewed, and in these instances I either persuaded their daughters or daughters-in-law to provide needed information, or at least determined if they were unusual in important ways by consulting the household registry and by talking to neighbors and neighborhood representatives.

Since many households did not include women of ages 55 or over and since many women in their mid-30s lived in conjugal units (neolocality being the prevailing rule of residence), I extended my inquiry to include married women under age 55. It was impossible, however, to interview each of them because of restraints on time and because virtually all were factory workers on a three-shift schedule. The data on these women are therefore based entirely on questionnaires. Since the memories of the younger women were better than those of the older women, I do not think that this is a serious shortcoming. I used household registers to obtain data on households without married women.

At the completion of my information gathering, I had interviewed and collected questionnaires from 272 women of ages 55 and over (96 percent response). Another 312 questionnaires had been obtained from married women under age 55 (95 percent response), and I had an additional 242 questionnaires for married daughters and daughters-in-law, seventy-three of whom lived with the older informants. Information about households without married women was taken directly from household registers and corrected with the help of local authorities. In the analysis that follows I make use only of data pertaining to Red Sky households and to women living in Red Sky and its adjacent neighborhood. I have not included information obtained about daughters and daughters-in-law living elsewhere.

It was crucial to this research that the timing of events be as accurate as possible. The traditional Chinese manner of calculating age can throw ages off by one or two years because children are considered to be age 1 at birth, and another year is added at the New Year. This is particularly a problem in the case of older women. However, another Chinese tradition makes it possible to get around this difficulty. Each year is linked to one of twelve animals. Because the animals follow each other in a particular sequence, forming a twelve-year cycle, the knowledge of a person's year-of-birth animal makes it possible to pin down the year of birth. There is no comparable custom that would make it possible to fix the year of marriage, but neither is there a tradition that systematically generates error.

This study is based largely on retrospective data. Every effort was made to reduce the number of unreported births, miscarriages, and abortions. Informants were pressed about all birth intervals that seemed unusually long (more than two years). All efforts notwithstanding, however, there is still reason to believe that some births and miscarriages were not reported, as infant mortality rates seem low for the location. Although I do not present them in this paper, miscarriage rates also seem low. One consequence is that the fertility rates, particularly those for earlier periods, may slightly underestimate real rates. I will discuss this in more detail later.

PATTERNS OF MIGRATION

Red Sky is one of twenty-eight neighborhoods or "residents' committees" (*Juminin Weiyuan Hui*) in West Mountain Street, West River District, Tianjin City. In 1982 West River District administered a population of 501,152 (State Council Census Office 1983:6). According to local authorities, West Mountain Street, which covers an area of 72 square kilometers, had a population in 1981 of 68,699 in 18,286 households. The neighborhoods of West Mountain Street are relatively new. Before Liberation in 1949 the area was used for water drainage and "dumping corpses of the poor." After 1949, however, Tianjin developed rapidly and, from 1954, West Mountain Street was transformed; 172 state factories were built, along with some 900 tenement buildings. A business and service infrastructure emerged to meet the needs of the rapidly growing population.

Most of the inhabitants of West Mountain Street came either from other parts of the city or from the surrounding Hebei countryside. For the most part urban migrants were poor, often solitary, males in search of relief from exceptionally oppressive conditions in the rural areas. It was not uncommon for families with several sons to send one or more into the city to learn a marketable skill, or for husbands to leave their families to seek better opportunities in the city. Urban migration did not necessarily mean, though, either complete separation from family members in the rural areas or permanent residence in the city. The boundary between city and country was highly permeable; migrants often maintained roots in the country, returning during harvest, or to marry. They made their way back to the city when their labor became superfluous, when new opportunities opened up, or when natural disaster made life in the countryside more untenable than that in the city.

There were numerous migratory waves during the 1920s and 1930s, mainly the result of civil war, famine, and flood. More than 30,000 people fled the famine-stricken rural areas in the autumn of 1920, for example. In 1939 a flood precipitated a major migration, and even more people reportedly found their way to Tianjin during the spring of 1940 because earlier flood damage made it impossible to plant crops.

The largest wave of refugees came during the years of civil war that preceded Liberation; by mid-1948, refugees in Tianjin numbered about 100,000 (Hershatter 1982:413–14). Figure 1 provides evidence of this early massive migration to Tianjin. It reveals a sharp decline in the proportion of women now living in Red Sky whose families lived in Tianjin during the 1920s, when migration to the city was substantial. The proportion continued to decline gradually during the 1930s, and then abruptly at the time of the 1939 flood. The proportion of women from Tianjin rose gradually beginning with the early 1940s, and then precipitously from 1959. According to Kenneth Lieberthal, when the Chinese Communists took Tianjin in 1949:

> [they] rapidly removed the most obvious signs of the chaos that had preceded liberation—the scattered soldiers, refugees from other areas, homeless persons from the suburbs, and so forth. . . . The Communists registered the over 22,000 students and landlords who had fled to Tientsin from the Northeast and sent them back to their native areas. They sent an additional 5,700 students and teachers from North China back to the countryside (Lieberthal 1980:31–32).

From 1959 Chinese policy systematically operated against migration to the city. Strict measures, such as rationing and control of travel, work, and housing, effectively stopped urban migration and forced many young city dwellers back to the country. The effectiveness of these measures is indicated in Figure 1 by a precipitous rise in the proportion of women from Tianjin after 1958.

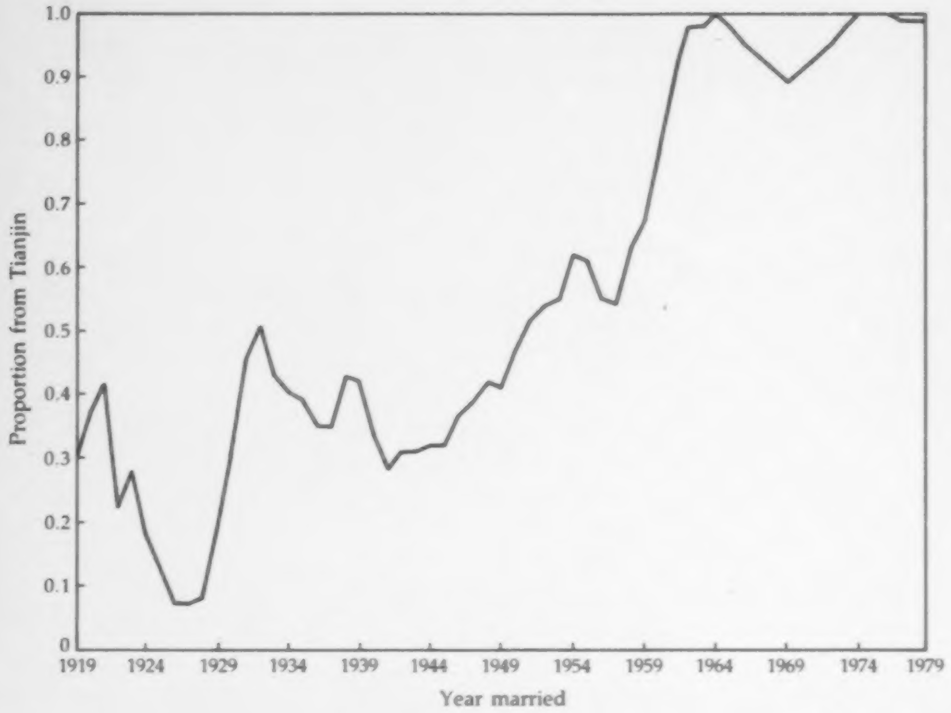

Figure 1. Proportion of women from Tianjin, by year married: Red Sky, December 1981
(five-year moving average)

POPULATION STRUCTURE

In December 1981 the population of Red Sky numbered 1,831, 952 males and 879 females. Red Sky's age-sex pyramid for that time (Figure 2) reveals two marked constrictions, one from about 1937 to 1952, the other since 1962. The first is, in part at least, a result of catastrophic conditions in Tianjin from the time Japanese troops occupied and dominated the city and surrounding countryside in 1937 through the years of World War II. During this period of starvation, shortage, inflation, and spousal separation, fertility plummeted. The situation was exacerbated by the particularly devastating flood in 1939. Some Red Sky residents claim that, in response to these difficult conditions, urban people often intentionally avoided conception. Because avoidance was not parity-specific, however, fertility curves for the period resemble those of a natural fertility population characterized by a low level of fertility. The second constriction in the age-sex pyramid is largely the result of systematic and increasingly effective family planning efforts since 1962.

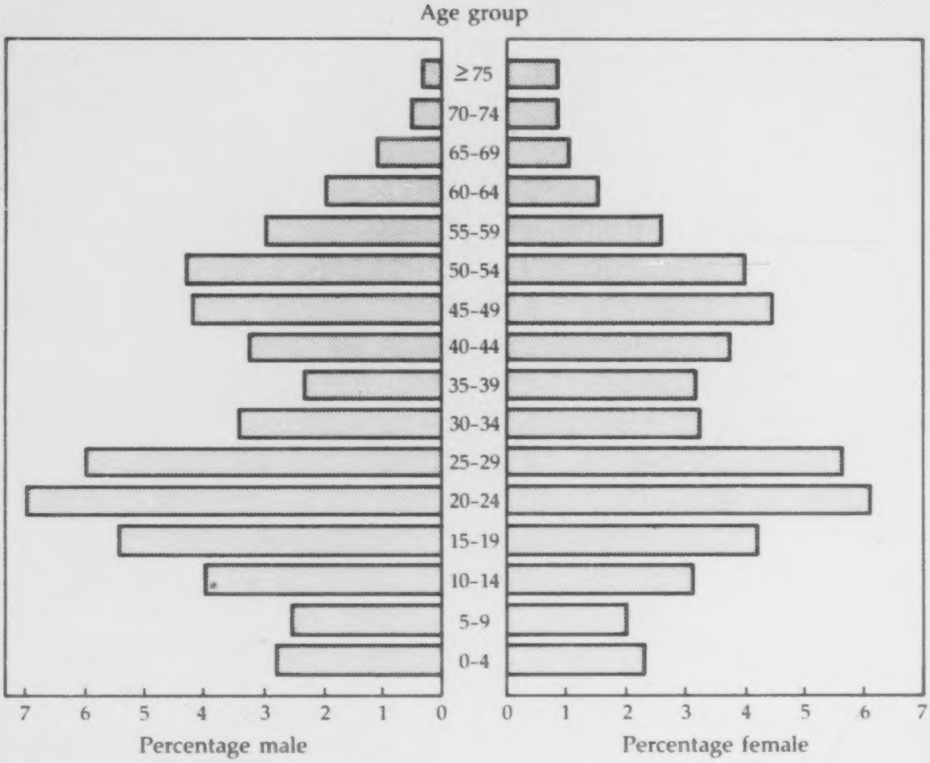

Figure 2. Age-sex pyramid: Red Sky, December 1981

It is possible that the two bulges in Red Sky's age-sex pyramid were less the result of periodic disasters than of the way the community was settled. Opened up about twenty-five years before the time of the survey, the area may have attracted a disproportionate number of young married or single people not already attached to existing factories and housing. These people and their children might account for the two bulges in Figure 2. Although the nature of settlement may have exaggerated these bulges, comparison with data from the 1982 Chinese Five Cities Project reveals similarly shaped age-sex pyramids even for well-established urban neighborhoods (Five Cities Family Research Project Group 1985:336-43).

Red Sky's masculinity ratio in December 1981 was 108.3, which is close to that of urban China generally; the sample census conducted in 1982 indicates an urban ratio of 107.6 (State Statistical Bureau 1983:276-77). One reason that has been suggested for China's relatively high masculinity ratio is that the population has become substantially younger since 1949. Since sex ratios at birth and among children to age 15 normally favor males, the overall masculinity ratio for a young population is also likely to favor males (Liu Chunmei and Li Zhu 1984:154-55).

The 1981 data from Red Sky do not, however, indicate an especially young population. The age-dependency ratio was 27 percent. Most of the population (79 percent) was in the nondependent age category, 15–64; only 17 percent of Red Sky's population was under age 15. Calculations using urban figures from the sample census indicate that the age-dependency ratio was a bit lower in Red Sky than in urban China generally, where it was 31 percent; 26 percent of China's urban population was under age 15 (State Statistical Bureau 1983:276–83).

To what extent is the low age-dependency ratio in Red Sky a new phenomenon? Although I have no hard data on age dependency either in Red Sky or in Tianjin for periods prior to my research, there are early data from Danggu (Tangku), a town some 30 miles to the southeast. According to a 1926 survey of workers' families at the Jiu Da (Chiu Ta) Salt Refinery located there, the age-dependency ratio was similar to that in contemporary Red Sky (Lin 1928:56). To compare dependency in Red Sky with that in Danggu it is necessary to modify the dependency measure to use age 60 as the start of the oldest age group rather than the more conventional age 65. The overall age-dependency ratio in Danggu was then 35.3 percent compared with 25.4 in Red Sky, the child-dependency ratio was 24.7 percent compared with 25.4, and the aged-dependency ratio was 10.5 percent compared with 11.9. Since the data pertain only to workers living near the refinery *with their families*, and since the majority were young males living in the plant dormitory, the age-dependency ratio for the town was probably lower, with fewer elderly people and still fewer children.

While Chinese cities are not all the same, the figures for Red Sky are also similar to those from Beijing (Gamble 1921:416). The age-dependency ratio for Beijing in 1917 was 28 percent, which is almost the same as my figure of 27 percent. The child-dependency component for Beijing was 22 percent, and the aged-dependency ratio was 5 percent. Both figures are remarkably close to those for Red Sky (22 percent and 6 percent, respectively).

In short, China's cities may have long been characterized by a high proportion of individuals in potentially productive age categories. In the past this was likely the result of high mortality rates and of wives and children remaining in the rural areas, both contributing factors to a low child-dependency ratio. Today, however, the low child-dependency ratio is instead a consequence of unusually effective family planning. Similarly, older people currently constitute a small proportion of Red Sky's population not because of high mortality or because they return to the countryside when they grow old, but because massive immigration of young people prior to the late 1950s, together with periods of high fertility, resulted in a relatively large cohort of young adults.

Rather than reflecting the young age of the population, the high masculinity ratio characteristic of contemporary Red Sky may in part reflect fluctuations that are a function of working with small populations. But if the difference between number of males and females is real, then it may be less a function of the population's youth than the product of migration patterns. Before 1949 and for some time thereafter, the population of China's cities generally contained a disproportionate number of single men, or married men with families in the countryside. According to various sources, sex ratios were far more favorable to men in pre-1949 Tianjin than they are at present; the sex ratio was 141.5 in 1936 (*China Yearbook* 1937–45:2), 135 in 1939 (Tianjin Municipality Executive Office 1939:n.p.), 137 in 1947 (Tianjin Municipal Statistics Bureau 1948), and 133.4 in 1948 (*China Yearbook* 1950:17). Women and children often remained in the countryside with the husbands' parents, as urban life was felt to be unsuitable for women and children. Women who lived in the city very often did so in response to poverty, and those who worked were surely doing so for this reason since outside work under male foremen automaticaly placed a woman's virtue in question.

There is reason to suspect that female infanticide may also have contributed to the sex imbalance, as birth statistics indicate a disproportionate number of males. In 1939, for example, the sex ratio at birth was 112 (Tianjin Municipality Executive Office 1939). Although more males were reported born, females "attained parity" in death, as Hershatter put it; women constituted 50 percent of all deaths in 1939 although they accounted for only 43 percent of the population (Hershatter 1982:362; see also Tianjin Municipality Executive Office 1939). Data from Sidney Gamble's 1917 Beijing survey also indicate a higher death rate for females at every age. Although women constituted 46 percent of Beijing's population, the overall female death rate was 33.2 compared with 21.6 for males (Gamble 1921:417–18).

On the other hand, the preponderance of males in Tianjin's pre-1949 population cannot be accounted for simply by differences in mortality. Among workers, at least, it was mainly the result of a pattern of migration that brought more males than females to the city in search of work. Even today there are men who have moved to the city without their families, for different reasons, though, than in the past (Goldstein 1985:44–46). Regulations governing migration to China's major cities in place since the late 1950s limited urban migration, but they also made it difficult for rural men assigned work in the city to bring their families with them. It may be significant that, if we exclude from our calculation thirty-four Red Sky men who were living alone, the masculinity ratio in Red Sky drops to only 104.4, which is quite normal.

Taken by itself, then, Red Sky's masculinity ratio does not necessarily suggest an unusually young population, any current tampering with sex ratios in the form of female infanticide, or even a disparity resulting from a disproportionate number of female deaths at later ages—according to the census results for Tianjin's West District, the crude death rate in 1982 was 5.6 per thousand for both males and females (State Council Census Office 1983:1:12–13, 3:29).[2] Rather, it is a function of the dramatic effect of urban migration on population characteristics and structure in the area.

EDUCATION, OCCUPATION, AND INCOME: NARROWING THE GENDER GAP

> A man in China is usually subjected to the domination of three systems of authority: (1) the system of the state (political authority), ranging from the national, provincial and county government to the township government; (2) the system of the clan (clan authority), ranging from the central and branch ancestral temples to the head of the household; and (3) the system of gods and spirits (theocratic authority), including the system of the nether world ranging from the King of Hell to the city gods and local deities, and that of supernatural beings ranging from the Emperor of Heaven to all kinds of gods and spirits. As to women, apart from being dominated by the three systems mentioned above, they are further dominated by men (the authority of the husband). These four kinds of authority—political authority, clan authority, theocratic authority and the authority of the husband—represent the whole ideology and institution of feudalism and patriarchy, and are the four great cords that have bound the Chinese people and particularly the peasants (Mao 1954:45).

The preferred and most common postmarital residence pattern in traditional Chinese contexts, and in rural China today, is patrilocal. The expectation is that sons will remain with their parents at marriage while daughters will leave to join their husbands. Property passes in the male line, and the relationship between parents and children is emphasized more than that between spouses. As care of the aged is entirely in the hands of sons, male children are strongly preferred. The common saying is, "boys are precious, girls useless." Daughters are useless in the sense that they are ultimately given to others—usually in other villages or neighborhoods—just as they reach productive age.

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[2] Calculations using figures gathered in the Five Cities Project reveal sex ratios more favorable to women than that in Tianjin; e.g., the masculinity ratios for Beijing, Shanghai, Nanking, and Chengdu ranged from 91.2 to 99.8 (Five Cities Family Research Project Group 1985:358). Those ratios may actually underestimate the number of males, however, because researchers evidently did not include single men living in factory dormitories.

The inclination in China has long been to temper or even to eliminate this patrilineal bias. Mao was certainly not the first to propose that China was laboring under a social system in need of complete overhaul. The notion has roots that go back at least to the second half of the nineteenth century, at the time of a violent Western intrusion. During the mid-nineteenth century the Taiping rebels spoke of fostering gender equality, and, during the so-called "100 days' reform" in 1898, family reform was held to be essential to the modernization that would enable China to resist the foreigners and to assume a place in the community of modern states. After the last imperial dynasty, a great ideological ferment began that crystallized in the May Fourth Movement of 1919. The country's ills and decrepitude were blamed on the restraints of tradition and, in particular, on the traditional Chinese family and its extensions—lineage and clan. Intellectuals spoke of the need to create a "new society" in which marriage would be based on mutual attraction and love, and in which the individual would be liberated from the control of the family.

Although the intellectual roots of family reform antedate the Chinese Communists, the Communists were the first to effectively engineer major changes. It was Mao's position that the traditional Chinese family and its system of ideological and ritual props (like ancestor worship) constituted a kind of sociocultural disease. Mao and his colleagues were convinced that as long as there was no real freedom of marital choice and children were married early to satisfy familial rather than individual needs, as long as there was no freedom of divorce, as long as male prerogatives continued to be emphasized at the expense of female rights and privileges, and as long as women remained subjugated to their husbands and mothers-in-law, China would suffer inefficiencies and nepotism, and therefore subjugation at the hands of barbarians.

The belief was that the family was part of a superstructure. To change family relations, therefore, the material foundations upon which the family was constructed—in particular, the nature of property relations—must be altered. Family reform in the countryside would inevitably result from agrarian reform. In the cities it would follow from changes highlighting the conjugal relationship. Neolocality would alleviate pressures and constraints imposed by the parental generation. Providing women with access to education and involving them in wage labor outside the home would presumably give them greater voice within the domestic sphere.

Education

The evidence from Red Sky indicates a remarkable expansion of access to education for women since Liberation. Although the data suggest a significant male advantage overall at each level of attainment, when they are broken down by age it is clear that the gender differences reflect historical rather than contemporary reality (Table 1). Educational access increased for both sexes, but especially for women. The gender difference is not significant at any level for people under age 40. Data from the Five Cities Project similarly indicate rapid improvement in women's education. A comparison of the education of husbands and wives by year married in three Shanghai localities and in one Nanking neighborhood shows substantial improvement in the relative status of women despite the fact that men still enjoy an advantage (Five Cities Family Research Project Group 1985:105, 149, 179, 203-4, 361-69).

The data from Red Sky also show evidence of an interesting reduction in the proportion of residents attending college. The proportion of men and women of ages 30-39 who attended college was 7.5 percent, compared with 9.8 percent of those 40-49. The percentage declined further to 2.2 in the age group 20-29. The change is especially marked among men. Twenty percent of all men 40-49 attended college, but the percentages for men 30-39 and 20-29 were only 7.4 and 2.0 respectively—a decline that is statistically significant. This reduction in college attendance was probably related to institutional disruption associated with the Cultural Revolution. From 1966 to 1972 all colleges were closed. Although they were reopened in 1973, academic entry standards were waived and the quality of instruction was poor until about 1976. This had little effect on the quality of education for individuals of ages 40-49, but it did affect younger people. Those in the age group 30-39 at the time of the study either had no access to college or were limited to programs that provided inadequate academic training. People now in the age group 20-29 had to endure middle and high school training that was so deficient that, when university entrance examinations were reinstated in 1976, they were unable to compete successfully for available openings with people of ages 30-39, who had at least obtained an adequate middle and high school background. The problem was certainly not specific to Tianjin. According to one neighborhood study for Shanghai, "the educational level declined among couples married after 1977. Most only achieved middle school (wives 71 percent, husbands 50 percent), and only one wife attended college" (Five Cities Family Research Project Group 1985:106).

Employment

A breakdown of Tianjin's population in 1947 by sex and occupation indicates that 42 percent were employed, that most workers were male, and that the kinds of work done by men and women were not the same (Tianjin Municipal Statistics Bureau 1948). Only 10.8 percent of women were employed, compared with 65 percent of men. Women constituted 16 percent of the industrial labor force, 39 percent of the service sector, and 3 percent

Table 1. Educational level attained, by age and sex: Red Sky, December 1981 (percentage)

Educational level	<20		20–39		40–59		≥60	
	Males (N=266)	Females (N=207)	Males (N=334)	Females (N=319)	Males (N=259)	Females (N=246)	Males (N=60)	Females (N=70)
All levels	100	100	100	100	100	100	100	100
None	28	26	1	1	2	29	7	76
Primary or higher	72	74	99	99	98	71	93	24
Middle or higher	46	49	96	96	69	39	58	3
High-vocational or higher	24	23	37	40	35	16	28	1
College or university	*	*	4	4	14	3	3	1

* Less than 1 percent.

Table 2. Population employed, by age and sex: Red Sky, December 1981

	Males		Females	
Age group	No.	%	No.	%
16–19	95	43	65	35
20–29	237	93	214	92
30–39	108	100	115	97
40–49	136	98	147	82
50–59	132	88	117	49
60–64	36	61	27	11
>64	34	18	47	6

of the commercial sector—the three sectors that most commonly employed women. Of males employed, 43 percent were in commerce, 30 percent in industry, and another 10 percent in communications and transportation. Of employed women, on the other hand, 11 percent were in commerce, 46 percent were in industry, and 27 percent in the service sector. Since 1949 the proportion employed among China's urban population has risen dramatically. In Tianjin alone, employment rose from 27 percent during the 1950s to 63 percent in 1979. Whyte and Parish propose that the decline in unemployment during the 1970s was, in part at least, the result of families having fewer children (Whyte and Parish 1984:37–38).

For Red Sky, occupational information is available for 1,821 people, or 98 percent of the population. As of December 1981, 64 percent were salaried, a percentage slightly lower than in other cities; data on proportion of family members employed available for five of eight urban localities surveyed indicate a range from 68 to 77 percent (Five Cities Family Research Project Group 1985:412). Of Red Sky's "working age" population (ages 16–59 for men and 16–54 for women, as defined in the sample census), 84 percent were employed (87 percent of working age men and 80 percent of women). Calculations based on figures for the entire municipality indicate a rate of 89 percent (98 percent of working age males and 79 percent of females) (State Statistical Bureau 1983: 306–7, 326–27). Working age males were therefore more fully employed in Red Sky than in Tianjin as a whole, but this could be because the figures for all Tianjin include suburban and rural people under municipal administration, populations that might well have higher male underemployment.

Table 2 indicates the degree to which the promise of full employment has been fulfilled in Red Sky. For ages 20–39, employment is close to universal for both sexes, but the sexes diverge thereafter. As in the past, males still constitute a significantly greater proportion of the work force. A large proportion of Red Sky's youngest and oldest workers are male—for several reasons. As jobs, like housing, are allocated by state agencies, men tend to be assigned work a bit sooner than women. Men also retire later; the recommended retirement age for men is 60 compared with 50 for women. In addition, many of Red Sky's older women never entered the work force, or worked for only short periods.

Most of the employed population of Red Sky consists of factory workers (Table 3). Next in number are office workers and those employed in the service sector. Only 3 percent of the work force, almost entirely older women, are employed by local (neighborhood-run) enterprises. Workers under age 40 vary little in type of employment except that men more commonly than women find work in the service sector. Gender differences are more striking, however, for older workers; men are more likely than women to be cadres and office workers, while women more often work in neighborhood collectives or in the service sector. Middle-aged men have a virtual monopoly over important administrative and white-collar jobs. From these data alone, though, it is difficult to know to what extent women are excluded from certain kinds of jobs simply because they are women, and to what extent their lack of representation is due to the fact that they entered the work force late, have little seniority and experience, and generally retire earlier than men.

Despite impressive improvement in levels of urban employment in China generally and in Tianjin in particular, unemployment continues to be a matter of concern, particularly as it affects the young. In 1981, 7 to 8 percent of Red Sky residents in their 20s had not yet been assigned work. The figure mirrors the 7 percent reported by Whyte and Parish for urban China during the early and mid-1970s (Whyte and Parish 1984:201).

Income

The findings of a recent neighborhood survey for Beijing indicate a positive correlation between level of education and wages for women of ages 41 or older (Five Cities Family Research Project Group 1985:48–49). The relationship is reversed for younger women, however, especially for those under age 30. The explanation proposed is that, from 1949 to the mid-1970s, Chinese policy favored blue-collar over generally better educated white-collar workers. The salary scale of white-collar workers was characterized by more steps with less difference between steps. White-collar workers also received fewer and less substantial bonuses. The result was that seniority generated income increments more slowly for such workers.

The data from Red Sky confirm a positive relationship between level of education attained and income for people of ages 60 and over. Although the results are ambiguous for residents of ages 30–59, we do find the antici-

Table 3. Type of employment, by age and sex: Red Sky, December 1981 (percentage)

	≤39		40–59		≥60		All ages	
Employment	Males (N=369)	Females (N=333)	Males (N=249)	Females (N=177)	Males (N=26)	Females (N=7)	Males (N=644)	Females (N=517)
Local collective	1	1	—	15	—	14	1	6
Service	24	16	7	11	23	29	17	14
Industry	57	58	34	42	23	14	47	52
Office	14	17	25	20	19	14	18	18
Cadre	—	—	22	1	31	14	10	1
Technical or professional	5	8	12	11	4	14	8	9
Total	101	100	100	100	100	99	101	100

Note: Percentages may not sum to 100 because of rounding.

pated negative relationship for those under age 30. The mean monthly wage for primary, middle, and high school-educated males under age 30 is 42.3, 41.4, and 34.8 renminbi (RMB) respectively; for females the means are 41.3, 40.2, and 35. (One RMB was equivalent to US$0.65 at the time this study was conducted.)

The mean monthly income per household in Red Sky in December 1981 was 131.5 RMB, or slightly higher if pension income is included. This figure refers to basic wages only and does not include bonuses, which have been increasing in value since 1979. If each wage is adjusted by adding 7.5 RMB, the average monthly bonus at the time of the study, the mean wage for males was 63.8 RMB; for females it was substantially less—52.3 RMB. (These figures are derived from households including at least one married woman.) People working in neighborhood enterprises earned less and, in 1981, could not generally count on monthly bonuses. If they are excluded, the average wage was 64 RMB for males and 53.1 for females

The income of Red Sky workers is similar to that of urban workers elsewhere. The State Statistical Bureau estimates the mean monthly household income per person in urban China in 1981 to be 38 RMB (*People's Daily*, 7 March 1983). A 1980 survey of 500 worker families in Tianjin indicated an average monthly per capita wage of 39.4 RMB, after deducting what was spent for the support of elderly people living elsewhere. The figure includes bonuses and a monthly subsidy of 5 RMB paid since October 1979, as compensation for a rise in the price of some foodstuffs (Li Hongfa 1981:45). If a 7.5 RMB bonus correction is added to the mean per household person wage in Red Sky (1981), the result, 41 RMB (or 43 RMB if pension income is included), is very similar to those for Tianjin and urban China generally.[3]

For many years since 1949, Chinese policy has stressed egalitarianism. Until recently the slogan was "everyone eating out of the same big pot." Full employment and the leveling of income differences have long been major objectives in the People's Republic of China. The promise of full employment has already been closely approached in Red Sky. To what extent have income differences also been narrowed?

Whyte and Parish (1984) report considerable equality of income in urban China generally. The figures from Red Sky (Table 4) are in agreement; what difference exists is in the direction of even greater income equality.

The average monthly basic wage earned by workers in Red Sky at the time of the study ranged from 33 RMB for neighborhood enterprises to 90

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[3] My colleague in Tianjin, Pan Yunkeng, using essentially the same data set as that used here, has also calculated the monthly per family member income including wages, bonuses, and welfare payments. The result is only 2.5 RMB higher than the figure provided here. Of all urban localities surveyed as part of the Five Cities Project, Tianjin has the lowest per capita income. The highest reported—51 RMB—was for Shanghai (Five Cities Family Research Project Group 1985:419).

Table 4. Income inequality: Red Sky, urban China, and developing societies

Location	Gini coefficient	% of income earned by richest 10% of households	% of income earned by poorest 40% of households
Red Sky	.23	19	25
Urban China	.25	21	25
Developing market societies (average)	.43	33	15

Source for urban China and developing market societies: Whyte and Parish (1984).

RMB for cadres (Table 5). The fact that the better-paid occupations are largely dominated by men undoubtedly contributes to their higher average salary. The most poorly paid jobs, those in neighborhood enterprises, are almost exclusively given to older women. Among younger workers the wage gap is narrow. While it is possible that, with increasing age, men will advance more quickly than women and once again produce a gender gap, during their most fertile years women do make a substantial contribution to domestic income. Although they earn less than men, they provide 41.9 percent of domestic income.

MARRIAGE CUSTOM AND PRACTICE

The data from Red Sky show substantial progress in removing obstacles to education for women. Progress has also been made in providing women with access to nondomestic employment and in narrowing the gender difference in wages. Increasing involvement of young people in the industrial work force and growing reliance on wage income have contributed to individual independence. This in turn has made it possible for the urban young to respond positively to attempts to shift responsibility for the selection of spouses from parents to children. Informants claim that marriage is now contracted to fulfill the needs and aspirations of the individual rather than those of parents and family. This change has affected nearly all aspects of marriage custom and practice.

Universality of and age at marriage

In Red Sky marriage is virtually universal, at least for those of ages 40 and over (Table 6). However, the proportions of unmarried men and women under age 35 are unusually high, even by Chinese standards.

People marry late in Red Sky. Between the early 1930s and the late 1970s the mean age at marriage increased continuously for both sexes and the

Table 5. Monthly wages, by type of employment and sex: Red Sky, December 1981

Employment	Mean basic wage (RMB)	Wage with bonus adjustment				
		Males		Females		Both sexes
		No.	Mean (RMB)	No.	Mean as % of male	Mean (RMB)
Local (neighborhood) enterprise	33	3	33	30	124	40
Service	45	98	55	66	87	52
Industrial	46	249	56	253	91	53
Office	56	103	69	89	84	64
Cadre	90	57	98	2	93	97
Technical or professional	62	49	76	41	83	70
All types	51	559	64	481	81	59

Table 6. Population ever married, by age and sex: Red Sky, 1981; China, 1982 (percentage)

	Red Sky				All China	
	Males		Females		Males	Females
Age	No.	%	No.	%	%	%
15–19	89	—	60	—	1	4
20	15	—	10	—	7	25
21	25	—	14	7	13	37
22	17	—	15	—	24	51
23	24	—	25	12	36	67
24	26	8	26	15	49	79
25	23	17	21	10	62	88
26	22	36	13	46	71	93
27	11	64	17	65	79	96
28	17	88	22	95	84	98
29	15	80	16	75	87	99
30–34	51	88	56	88	91	99
35–39	43	98	56	96	93	100
40–44	54	100	61	100	94	100
45–49	70	100	79	100	96	100
50–59	113	100	107	100	97	100
60–79	59	100	65	100	97	100
≥80	1	100	7	100	98	100

Source for all China: Banister (1984:249).

age difference between spouses gradually narrowed (Figure 3). Although the data set is small, there are indications of unusual rises in marriage age during the mid-1930s and again during the early and mid-1940s, both exceptionally difficult periods. During the mid-1930s Japanese troops occupied Tianjin and the surrounding countryside; there was also a major flood in 1939. The early and mid-1940s were years of warfare and famine, and many men were taken off to forced labor. The end of the war was associated with a drop in the age at marriage for males as many returned from military service or from forced labor. At the same time, general improvement in the economic sitiuation made it possible for many to consider earlier marriage. This undoubtedly contributed to the narrowing spousal age difference during the period.

Pre-1949 civil law established minimum marriage ages of 18 for men and 16 for women, thresholds that were raised by the Marriage Law of 1950 to 20 for men and 18 for women. In 1981 a revised Marriage Law raised

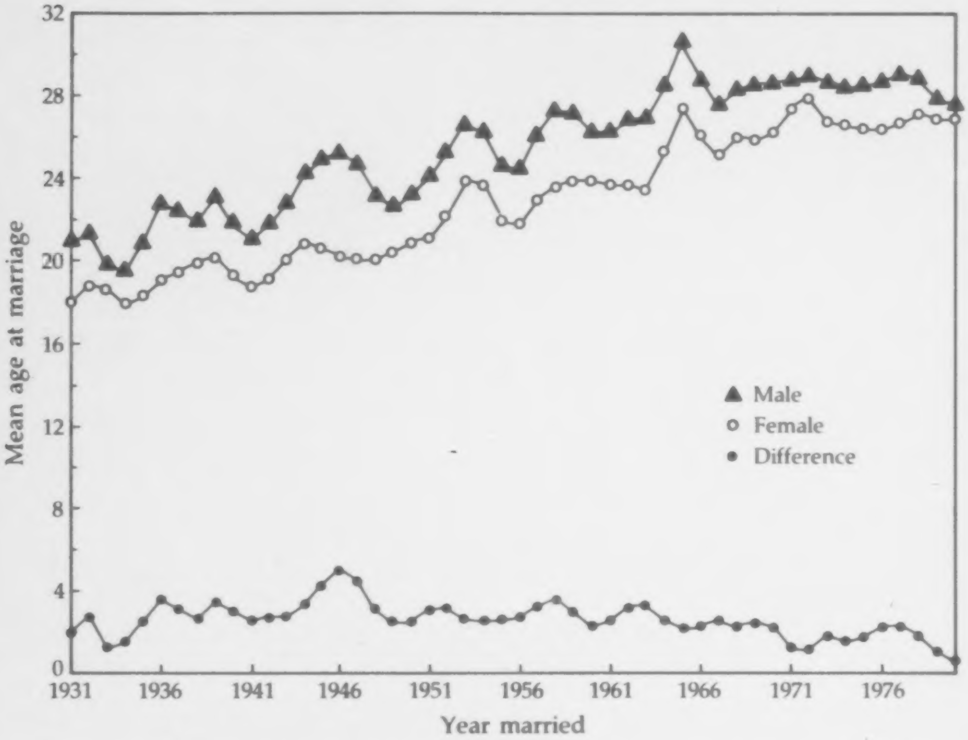

Figure 3. Mean age at marriage, by year married: Red Sky, 1931–80 (three-year moving average)

Note: Female ages are based on all Red Sky women and on women in the adjoining neighborhood for whom data were available.

the minimum ages once again to 22 for men and 20 for women. Before 1949, though, the legal requirements were not effectively enforced. After 1949, in addition to legal enforcement, administrative obstacles were used to press young people to delay marriage beyond the minimum ages. As a result, the mean age at marriage rose sharply. For reasons that are not clear, the marriage age seems to have dropped during the mid-1950s, especially during the 1955 "high tide" push to higher-order agricultural producers' cooperatives. People continued to marry above the legal age even then, but the administrative restraints that had held marriage age above legal requirements may have been relaxed somewhat. Restraints were evidently reimposed after 1956, however, and were maintained until the dislocations associated with the Great Leap Forward (1958) and the "three bad years" (1959–61).

In 1962 a concerted and systematic family planning program was initiated that renewed the emphasis on late marriage. Another rise in age at marriage therefore occurred from 1962 until the Cultural Revolution, when administrative restraints on marriage were once again relaxed for a few years. From about 1972, when family planning was reinstated, administrative policy required that both spouses be above 25 at marriage or that their combined age be at least 50 (Five Cities Family Research Project Group 1985:63; see also Coale 1984:41–42). Since 1979, however, with increasing emphasis on single-child families, administrative requirements have been lowered to about 23 for women, reportedly to alleviate concern about difficult births.

Data from the Five Cities Project indicate much the same trend in age at marriage. Since 1977 about 72 percent of urban women have married between the ages of 25 and 29, and another 12 percent have married later. Fifty-nine percent of urban men married between the ages of 25 and 29, with another 37 percent marrying even later (Five Cities Family Research Project Group 1985:264–94). In Red Sky the mean age at marriage (1977–81) was 28 for men and 26.9 for women.

In all Chinese cities surveyed, then, the actual ages at which young people marry are still substantially higher than either the law or administrative restraints would require. Chinese researchers have suggested several reasons for the continued delay (Five Cities Family Research Project Group 1985:23, 35, 63, 103, 144, 177, 197–98; see also Lyle 1980:261–62). People may delay marriage to provide more time for education and career development. Moreover, because the educational attainment and income of women have improved, women are in a position to exert more control over when they will marry than was true in the past. As young people assume more responsibility for providing the resources necessary for marriage and the establishment of a household and as they depend less on others economically, they may even find it necessary to delay marriage. Many recently married people who were sent to the countryside during the Cultural Revolution returned to the city only in their late 20s. They might well require added time to prepare for marriage. Although some couples register marriage early to establish a claim for scarce housing, most probably assess the housing situation and wait until they believe that space is likely to be made available. In the allocation of housing, moreover, priority is reportedly given to age at marriage more than to time married.

The data from Red Sky do not, however, support a positive relationship between educational attainment and age at marriage. When I broke the data down by period married (1948 or earlier, 1949–57, 1958–65, 1966–75, and 1976 or later), sex, and level of education, the results were inconsistent and the differences statistically insignificant, although it is possible that the small size of my universe obscured subtle differences. There is some suggestion of a positive relationship between education and age at marriage in data from the Five Cities Project, but because that analysis does not control for year or period married it is not definitive (Five Cities Family Research Project Group 1985:275–83, 295–303).

It is well known that rural people marry earlier than urban people in China (Coale 1984:41–42). It is possible then that increasing age at marriage in Red Sky was in some part a result of the decreasing proportion of residents with rural backgrounds. When I analyzed the data by period married, sex, and origin (rural or urban) of natal family at marriage, however, the results were again inconsistent and the differences in marriage age insignificant except for females married between 1949 and 1957. During that period women from urban families did marry significantly later than those from rural families (23.2 compared with 21.1; $p = .009$). That difference may be important because the substantial in-migration of rural women to Tianjin during that time could have moderated the general rise in marriage age. The larger proportion of rural women during the early post-Liberation years cannot be the whole story, however, because age at marriage had been rising steadily for both rural and urban women (and men). Since the difference between rural and urban men was not great in any period, it is unlikely that differences in provenance contributed substantially to the rise in male age at marriage.

It is likely that legal and administrative controls contributed more to the overall rise in marriage age since 1949 than did level of education, rural–urban provenance, or some increase in the economic preparation necessary to marriage. Why people have continued to delay marriage despite the general relaxation of such restrictions since 1979 is not clear, though. Regardless of education and origin, men and women continue to marry later than they are required to by law or administrative policy. The answer to this question will require more study, using larger data sets that allow finer controls.

Selecting a spouse

I questioned 531 women in Red Sky and the adjacent neighborhood about how they met their (first) spouses, how long they knew their husbands before marriage, and how they would judge the economic status of their families relative to that of their husbands'. Most of the women had been formally introduced to their husbands before marriage, by parents, other relatives, neighbors, or other go-betweens. Although most couples continue to rely heavily on formal introductions of some sort, the proportion of couples who met on their own and married without any formal introduction has been increasing since 1949, with peaks during periods of social and economic disruption (Figure 4). Data from the Five Cities Project indicate similar trends (Five Cities Family Research Project Group 1985:307–15). As women were drawn into the labor force, fellow workers played an increas-

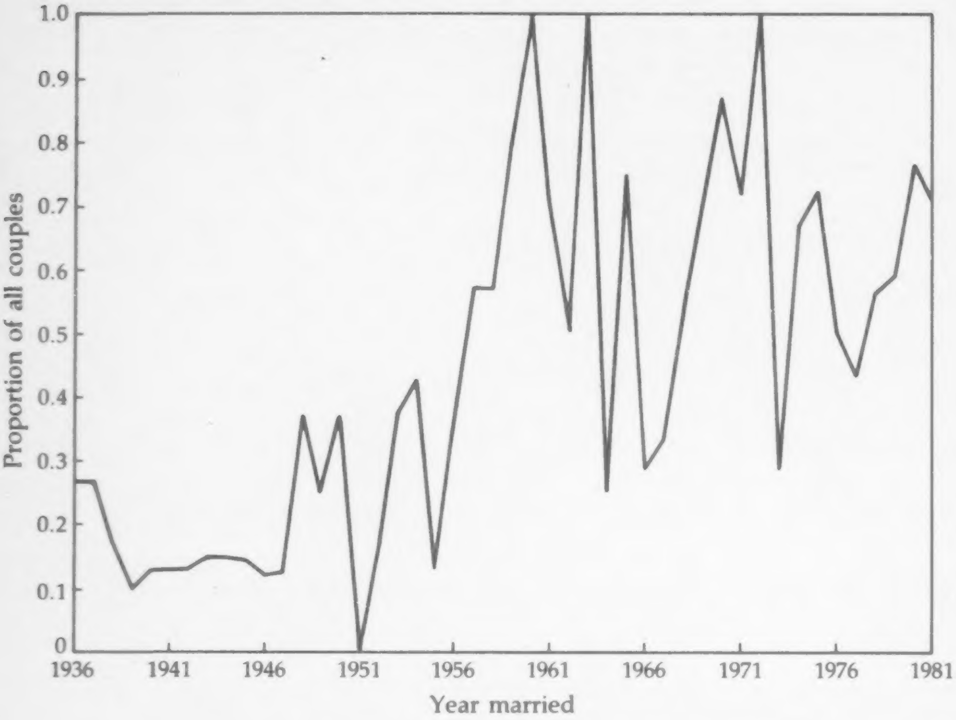

Figure 4. Proportion of couples who met on their own or without formal introduction, by year married: Red Sky, 1936–81 (five-year moving average)

ing role, from 10 percent of introductions before 1949 to 62 percent during the Great Leap Forward (1958), when women were particularly called upon to work outside the home. The proportion of marriages based on introductions by fellow workers has continued to be about 45 percent since 1965. If marriages involving either no formal introduction or an introduction provided only by fellow workers can be considered "new" in the Chinese context, then the proportion of new-mode marriages has increased dramatically since 1949.

While premarital relations between the sexes have not become casual or relaxed, the traditional separation of the sexes has been substantially modified since 1949. Young people now have more opportunity to meet, and when they marry they have generally known each other longer than in the past. The median number of months acquainted has risen consistently from less than one for couples married before 1949 to more than twenty-eight for those married since 1976. Nearly 50 percent of women married between 1958 and 1965 reported having known their husbands for one to two years before marriage; 29 percent knew their husbands for more than

Table 7. Time (in months) acquainted at marriage, by year married: Red Sky, December 1981 (percentage)

	Year married				
Months	<1949	1949–57	1958–65	1966–75	>1975
0	71	25	4	—	—
1–12	19	26	18	25	20
13–24	5	22	49	30	26
>24	6	27	29	45	55
Total					
%	101	100	100	100	101
No.	238	104	51	80	82
Median in months	0.2	12.3	23.0	23.8	28.5

Note: Percentages may not sum to 100 because of rounding.

two years. After 1976 the proportion acquainted for more than two years increased even more (Table 7).

Increasing premarital familiarity constitutes a major break with the past. It indicates an increasing stress on the conjugal relationship relative to the parent-child bond. There is reason to believe that this change is not unique to Red Sky; figures provided by Martin Whyte (private communication) indicate much the same trend—the percentage of couples acquainted for fewer than six months in his general urban sample dropped from 11, to 3, to 5 percent for women married during 1958–65, 1966–70, and 1971–77, respectively. The proportion of couples acquainted for two or more years rose from 32 to 53 percent and then dropped to 45 percent during the same periods. These data have been classified a bit differently from mine, but the results are not dramatically different.

Although I cannot precisely assess the relative status of families that become linked through marriage, it is possible to form a crude impression. In Red Sky, of the women willing to estimate the economic status of their families relative to that of their (first) husbands, the majority judged them to have been about the same. In 61 percent of the cases where family statuses were judged to be different, the husband's family was better off—a pattern consistent with the traditional Chinese view that marriage should link families "with equal gates" or, if unequal, then the husband's family should have the advantage. Data from the Five Cities Project confirm a strong preference for equal economic and educational status. Couples tend to have similar educational and occupational backgrounds, and, even more commonly, their parents have similar occupations. Where differences are found, the husband and his family usually have the advantage (Five Cities Family Research Project Group 1985:109, 178, 221-22).

When the data are examined by period married it is evident that "equality of gates" has generally been the rule in Red Sky, with more than 75 percent of marriages in all periods linking families of similar status. Still, the data do suggest some subtle changes. Immediately after Liberation, the proportion of marriages involving families with "equal gates" rose to levels well above those just prior to 1949, perhaps reflecting concern about family class labels as well as the economic leveling of families that resulted from reforms during that period. The Great Leap Forward was apparently associated with a drop in affinal equivalence, possibly because extreme economic dislocation created new disparities. The egalitarianism of the early years of the Cultural Revolution was associated with another rise in affinal balance, and, during the most recent years, yet another rise is apparent, perhaps the result of general and widespread improvement in income.

The statistical significance of changes in the nature of marriages of unequal status cannot be evaluated because the number of such marriages has been very small in all periods. The data nevertheless suggest a gradual and consistent shift away from hypergamy—from situations in which females marry "up." Year-by-year analysis suggests four periods during which the proportion of marriages in which women married "down" exceeded the proportion of hypergamous marriages: (1) in 1940, during a period of political and economic dislocation and one year after the Tianjin flood; (2) in 1956, during the "State-Private Joint Management Movement"; (3) during 1958-60, the worst years of the Great Leap Forward; and (4) possibly again during 1966-74, which corresponds to the Cultural Revolution.

Once again, the data base is simply too small for us to be sure that these apparent shifts were statistically significant. But if they were, then the timing suggests that unusual incidences of marriage down have been associated with profound economic stress and sometimes also with periods of radicalism during which family class labels assumed special importance. The special emphasis placed on class status during the radical shift of the Cultural Revolution had an impact on marriage, for example. That less than 50 percent of the asymmetrical marriages were hypergamous during this period confirms what many claim—namely, that some families found it expedient to seek political security by marrying daughters into families of more humble but more politically acceptable status. It is also possible that daughters were more often kept at home while sons were sent to the countryside and that this gave them both a steady job and more seniority at the time of marriage.

Table 8. Type of engagement ceremony, by year of marriage: Red Sky, pre-1949 to post-1975 (percentage)

Type of ceremony	Year married <1949 (N=217)	1949–57 (N=118)	1958–65 (N=60)	1966–75 (N=92)	>1975 (N=84)
Ceremony with formal exchange of gifts	52	13	3	2	8
Simple ceremony with few or no gifts	9	17	15	9	21
No ceremony or gifts	39	70	82	88	69
All types	100	100	100	99	98

Note: Percentages may not sum to 100 because of rounding.

Marriage rituals

My information on marital procedures and customs, although based entirely on questionnaires and interviews, nonetheless shows significant changes since 1949.

Before Liberation, marriage was usually preceded by a formal engagement and gift exchange between families. After 1949 Chinese policy discouraged engagement rituals, especially insofar as they involved exchanges of gifts; the figures indicate that Red Sky residents have been responsive—during the years after Liberation engagements were generally very simple (Table 8). With liberalization and increasing economic prosperity since 1976, however, interest in marital ceremony and ritual has renewed. Nevertheless, few marriages are now preceded by the sort of elaborate gift exchanges once much frowned upon by Chinese authorities.

Policy after 1949 also discouraged the giving of bridewealth and dowries—practices that, like the giving of engagement gifts, were considered "feudal" rituals that subjugated women to men and young couples to their parents upon whom they had to depend both for the selection of spouses and for the arrangement and conduct of marriages. The incidence and nature of these transactions has therefore changed substantially since 1949. In the past, both bridewealth and dowries were accumulated by families to be used in an exchange between families. More recently, however, potential spouses have assumed an increasing role in the preparation of these gifts, and items prepared are used exclusively to equip the new household. Red Sky residents indicated that, especially since 1976, bridewealth has been more and more delivered to the prospective bride rather than to

Table 9. Type of bridewealth, by year of marriage: Red Sky, December 1981 (percentage)

Type of bridewealth	Year married <1949	1949–57	1958–65	1966–75	>1975
None	46	64	60	61	23
Small: formerly a few items of clothing; now under 500 RMB	29	17	18	16	3
Medium: formerly a few items of jewelry; now 500–1,000 RMB, a bicycle, and a few items of furniture	19	14	17	20	36
Large: formerly considerable jewelry; now 1,000 RMB or more, a watch, bicycle, TV, and complete set of furniture	6	4	5	4	38
Total					
%	100	99	100	101	100
No.	230	104	57	84	69

Note: Percentages may not sum to 100 because of rounding.

her family. In no sense is it thought of as an instrument of purchase intended, in some part at least, to enrich the coffers of larger family units.

Before 1949, bridewealth was provided in more than half of all marriages (Table 9). Because families were generally poor and conditions of life difficult, however, the bridewealth was meager in value. After Liberation, just as the importance of engagement ceremonies and exchanges declined, so too did the giving of elaborate and costly bridewealth. And, as liberalization was accompanied by renewed interest in engagement ceremonies and gift exchange, so too did the incidence and amount of bridewealth increase. Interest in bridewealth was renewed as economic conditions in general, and family incomes in particular, improved and as government concern was relaxed. Thus, 77 percent of all marriages since 1976 reportedly involved bridewealth—a proportion even higher than that in the years just before Liberation.

In addition to the giving of bridewealth, most pre-1949 marriages involved dowries, usually very simple ones. The pattern for dowries after 1949 closely paralleled that for bridewealth (Table 10). Between 1949 and 1975 most marriages were without dowries. As in the case of engagement

Table 10. Type of dowry, by year of marriage: Red Sky, December 1981 (percentage)

Type of dowry	Year married <1949	1949–57	1958–65	1966–75	>1975
None	40	63	60	60	18
Simple: formerly and now a few items of clothing	30	17	21	8	7
Medium: formerly a few items of clothing and furniture, some household necessities; now same but no furniture	20	14	16	25	43
Large: formerly considerable clothing, bedding, complete set of furniture, and household necessities; now same but no furniture	10	5	3	6	32
Total					
%	100	99	100	99	100
No.	231	104	57	83	72

Note: Percentages may not sum to 100 because of rounding.

and bridewealth, the incidence and magnitude of dowries increased after 1975.

Traditional Chinese marriages also involved elaborate ceremony and costly feasting, mainly in the home of the groom but often also in that of the bride. Likewise, in Red Sky most marriages before 1949 (76 percent) were celebrated with ceremonies that included the worship of gods and ancestors as well as substantial feasts. Although most marriages continue to be celebrated ceremoniously, the ceremonies have generally become simpler. Elaborate feasting, and especially worship of gods and ancestors, became much less common in Red Sky, at least until the liberalization begun after 1975. Two simple, more frugal types of ceremonies—collective and "traveling" weddings—were officially recommended after 1949. Collective weddings are organized periodically by large work units or by the Women's Federation. The cost of such a wedding is negligible because several couples are married at the same time. Traveling weddings involve a minimum of ceremony and feasting. In principle, having officially registered their marriage, a husband and wife simply leave on their honeymoon. In some cases their work units provide a subsidy for the trip. Weddings marked in this way, however, without any ceremony at all, have attracted little attention and have been very rare indeed. In fact, since 1976, the more spartan weddings of earlier years have virtually disappeared. Nearly all weddings now involve ceremony and in most cases rather elaborate feasts. These general trends as described for Red Sky have likely been characteristic of other Chinese cities as well (Five Cities Family Research Project Group 1985:78, 150–51, 178, 204–5).

Marriage feasts in the groom's home were modest even before Liberation, their simplicity undoubtedly necessitated by the economic and political dislocations under which families labored. Sixty-seven percent of all grooms' feasts served fewer than 50 people. Such feasts continued to be modest until recently. Since 1976, however, many more families have provided wedding feasts, and the number of guests has increased substantially. Over half of all weddings since 1976 feasted fifty or more guests in the groom's home, and in many cases (17 percent) the number of guests exceeded one hundred. Wedding feasts in the bride's home have always been simpler and less common. That they continue to be less important than those in the groom's home is indicated by the fact that, even since 1976, they have been kept simple.

In sum, increasing interest in wedding ceremonies and feasts, like the growing interest in dowries and bridewealth, reflects not only an increasing economic capacity for such expenditure and a more abundant supply of necessary goods, but also a release of traditional notions about how status is to be expressed. The idea that providing large dowries and bridewealth and having lavish wedding feasts confers status has clearly not died in urban China. Nevertheless, the changes in marriage rituals and procedures that have occurred since 1949 have clearly encouraged the expression of free marital choice, giving young people greater voice in the selection of their spouses than in the past and ensuring that marriage is more often predicated on some degree of familiarity. These changes might be expected to produce a stronger, more independent conjugal relationship, which in turn could affect childbearing strategies.

Postmarital residence

Traditional Chinese preference for patrilocality notwithstanding, the frequency of neolocal marriages had been increasing in Red Sky even before 1949 (Figure 5). A pattern of migration in which poor rural men came to live in the city and were later joined by wives and children probably contributed substantially to that rise. Although neolocality has been the most common form of postmarital residence for some time, there were short periods during which the incidence of patrilocality appears to have increased somewhat. This happened during the worst years of the Japanese occupation, for example, and again during the "three bad years" (1959–61).

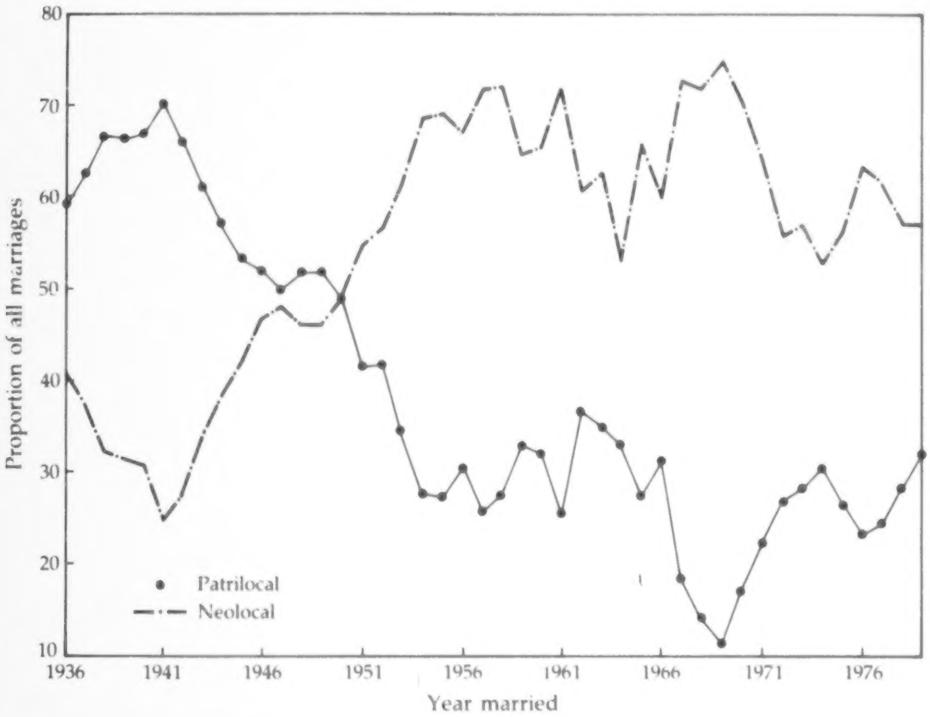

Figure 5. Postmarital residence, by year married: Red Sky, 1936–79 (five-year moving average)

In recent years, and especially since 1969, increasingly scarce housing has put a minor restraint on neolocality and on residential mobility in general. Although a great deal of housing was constructed in West Mountain Street during the early 1950s as the area was converted into a new industrial zone, additional investment in housing stock was thereafter considered a frivolous use of resources. As a result, the mean sleeping space per person in Red Sky was only 5.06 square meters in 1981. When Tianjin's housing stock was suddenly and seriously depleted by two major earthquakes in 1976, many people constructed small living huts in the streets. This may account for the sudden increase in neolocality for that year. Temporary housing constructed after the earthquake was gradually eliminated, but new housing has remained scarce. It is no surprise, then, that the proportion of patrilocal marriages increased slightly after 1976 (Figure 5). The official policy on housing construction has changed dramatically since 1976, however, and the problem of scarce living space is now being met head on. It is likely that the new construction will ease the problem in the course of time and that the potentiality for neolocality will increase.

The general increase in neolocality that occurred in Tianjin has also been characteristic of other cities. Data from the Five Cities Project show that neolocality has risen to more than 50 percent of all marriages while patrilocality has declined.[4] Those data also reveal a minor resurgence of patrilocality after 1976 (Five Cities Family Research Project Group 1985:318). The data from particular cities, however, reveal differences that reflect problems specific to each city or neighborhood. Chinese researchers, who are inclined to attribute the general rise in neolocality to the "modernization" process, propose that differences in housing availability constitute the major reason for variation from city to city. The recent minor resurgence of patrilocality, in their view, is a result of heightened scarcity of housing (Five Cities Family Research Project Group 1985:45, 154, 173, 205).

Implied in this interpretation is the idea that, in the normal course of modernization and urbanization, married couples would live alone if they could (see, for example, Five Cities Family Research Project Group 1985:173). In the field, however, it was not unusual to hear people say that they would live with parents if they could, and living with parents clearly has advantages. That most young women work outside the home and are also better educated than their mothers-in-law gives them considerable voice in family affairs. Their status relative to that of the older women with whom they live is therefore higher than in the past. At the same time, the older women in the household can help with shopping, housecleaning, cooking, and childcare, which is especially important given the continued shortage and the cost of daycare facilities. Because apartments are so crowded, however, newly married couples usually have to move out when new space becomes available. In such circumstances, movement may be less a reflection of desire than a response to crowded housing.

Although young women may not move away because of some uniform desire to escape the husband's mother, there is some reason to believe that older women may, for their part, find less advantage to remaining with their daughters-in-law now than in the past. Data from a 1985 survey of 1,000 households indicate a decline in the percentage of elderly people expressing a desire to live with their children. The percentage reportedly fell 10.1

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[4] Comparison of my tables with those in the published report of the Five Cities Project reveals some minor differences. In part this is because, in the course of our separate data analyses, my Chinese colleague Pan Yunkeng and I used slightly different classifications. Another reason is that the Chinese researchers involved in the Five Cities Project did not include in their analyses single persons living in factory dormitories. Yet another source of difference, according to my Chinese colleague, is that my original data set was "slightly updated" shortly after my departure from Tianjin. If that is true, then the higher incidence of neolocality after 1977 could reflect the fact that many new buildings were completed in 1981 and 1982, making apartments available to young couples who had earlier been living with parents.

percent—to only 50 percent—between 1983 and 1985 (*China Daily News*, 2 January 1986:4). Nevertheless, few elderly people actually live alone in Red Sky. Only 4 percent of all people of ages 60 and over (six females and nine males) were living alone in 1981. Most older residents were members of nuclear (49 percent) or extended (45 percent) household units. Thus, even though many more young people leave their parents at marriage than in the past, most of the elderly continue to enjoy the security provided by living with spouses or children (see Davis-Friedmann 1985:155–56).

It may be significant, in this connection, that when I compared the Red Sky residence figures with data on housing per person from the Five Cities Project I discovered that, among eight urban localities surveyed, those with the highest rates of neolocality were also those with the least apartment space per person (Five Cities Family Research Project Group 1985:437). Tianjin and Tuanjie Hu in Beijing have the least space per person and the highest rates of neolocality. Both are "new" neighborhoods, having been constructed during the early 1950s. In these neighborhoods traditional "U"-shaped compounds have been replaced by tenements with smaller, one- or two-bedroom apartments, suitable only for a married couple with unmarried children. The recent rise in patrilocality that has taken place in these two localities may simply reflect the fact that housing is scarce in a broader sense—apartments are not only crowded, but alternative possibilities have diminished. Without additional evidence, then, we cannot directly infer values and attitudes about living with parents from the rate of neolocality characteristic of a particular locality.

While neolocal and patrilocal marriages have been most common in Tianjin, other options do exist. There have always been situations in which husbands joined the families of their wives at marriage. Chinese and foreign scholars alike have claimed that such marriages were mainly contracted by poor families who lacked a male heir. Matrilocal marriages have always been rare in Red Sky, though. Only 2 percent of marriages were of this sort before 1949, when families were economically most depressed, and there were none at all between 1949 and 1966. I have detailed information about twenty-two cases of matrilocal marriage in Red Sky and in the adjoining neighborhood. The earliest of these marriages took place in 1916. In not one case since then did any of the children take the wife's surname. In nine out of the twenty-two cases the natal family of the bride had already produced a male heir to carry on the line, and in most cases either the husband's natal family was quite large and had limited living space, or the men were living alone. The mean household size was 3.8 for the women and 5.2 for the men. If the one-person households (those in which the marrying male was alone) are excluded, the mean household size for men marrying matrilocally was 6.2 persons. It would seem, then, that carrying on the patriline of the wife was not the main reason for matrilocal residence in these cases.

Matrilocal residence after marriage is now being encouraged for several reasons. First, the patrilineal bias considered so debilitating finds strength in the residential aggregation of consanguineally related males. Greater flexibility in marital residence would therefore help eliminate this bias. More important, attainment of current family planning objectives, in particular the goal of limiting families to one or at most two children, depends upon providing a guarantee of support in old age. For day-to-day care in old age, people continue to depend heavily on help from children, traditionally from sons. The fact that workers can now anticipate pension income reduces but does not remove this dependence. Many of the older women now reaching retirement age never participated in the nondomestic labor force, or did so only for short periods. They can expect few if any retirement benefits. By attracting an income-earning son-in-law, matrilocality could conceivably mitigate the traditional compulsion for sons, a drive that encourages people to have a second child, especially when the first is female. On the other hand, the same concerns that place a premium on sons inhibit parents from allowing sons to marry matrilocally, which is undoubtedly the main reason for the continued low incidence of these marriages in Red Sky. Although there has been a slight increase since 1966, matrilocal marriages continue to be rare.

"Duolocal" marriage, in which spouses live separately after marriage, has also been rare in Red Sky. Only 16 marriages in Red Sky and its adjacent neighborhood have been of this type, and only during the Cultural Revolution did their proportion reach as high as 5 percent. In some instances young people sent to the countryside during that period found urban spouses to justify requests for permission to return to the city. There also seems to have been some relocation of factories from coastal to inland locations at that time, reportedly in anticipation of war with the Soviet Union and in response to fighting along the border with Vietnam. The movement of workers with their work units may have led to some spousal separation at marriage.

Another marital option that has also had little appeal to Red Sky residents is that in which a girl, adopted in infancy or childhood, is subsequently married to her adoptive brother. In the anthropological literature on China, such marriage is often referred to as "minor" marriage. There is some controversy among scholars over the frequency and functions of this form of marriage, but, like matrilocal marriage, it is commonly believed to have reflected extreme poverty. Analysis of minor marriages in an area of northern Taiwan by Wolf and Huang (1980) indicates no relationship to poverty, however, and while the people of Red Sky have long known deprivation, and while mention of people marrying this way did occur in the course of interviews, none of the people in the study had actually married in this fashion. This finding suggests that even if minor marriages do occur more commonly among the poor, poverty does not necessarily mean that their incidence will increase.

Household form

In December 1981 there were 494 households in Red Sky, with a mean (and median) household size of 3.7 persons, which appears to be typical for the area (State Statistical Bureau 1983:6–7; State Council Census Office 1983:12–13). Households in Red Sky were predominantly (75 percent) nuclear, consisting only of a married couple and their children, if any. Extended-family households, with two or more conjugal units in different generations, were rare (15 percent), as were single-person households (9 percent) and joint-family households, with more than one conjugal unit in the same generation (1 percent). The Five Cities Project likewise indicates a preponderance of nuclear-family households.

Researchers involved in the Five Cities Project also concluded that families have become smaller and that "incomplete-broken" families and those consisting of two or more couples have both substantially declined. They consider these changes to be expected consequences of modernization (Five Cities Family Research Project Group 1985:81–83). Although families probably have become smaller and simpler as well as more complete since 1949, comparison of natal family form and size at time of marriage with those at present does not provide adequate demonstration of the fact. Since the age at marriage has been increasing for both sexes, it is possible that we are dealing with families at different stages of development. Even if the proportion of incomplete or single-person households has declined, the change cannot be attributed simply to some vague force of "modernization." If the proportion of broken and single-person households was unusually high during the years just prior to Liberation as a result of flood, famine, and war, then the subsequent decline in their proportion may indicate a return to more stable conditions as much as a response to changes associated with the modernization of Tianjin.

Intrafamilial relations: monetary contributions

Clearly, neolocality and the growing importance of wage labor have altered relationships within the family and the household in Red Sky. Although I was not permitted to visit homes or directly observe family interactions, many informants indicated that women no longer exert the influence and control over their daughters-in-law that they once did. On the other hand, parents no longer lose contact with married daughters who are living away from home. Today, daughters often send money and help their parents in nonmonetary ways as well. Of the 419 households for which I have income data, 11 percent reported regularly receiving remittances from relatives. Of those, 71 percent were getting help from daughters and 55 percent were receiving a monthly remittance from sons. The amounts sent by sons and daughters did not differ significantly; the mean remittance sent by sons was 9.1 RMB compared with 9.0 RMB for daughters. Thirty-eight percent of all households reported sending remittances—about 66 percent to the wife's parents, more than those sent to the husband's parents (55 percent). Data from other cities surveyed in connection with the Five Cities Project indicate a range from 28.5 to 54.7 percent sending remittances. The overall proportion of households sending remittances was 35.9, which is very close to the proportion revealed in my data. The range for households receiving aid was from 2.3 percent to 22.3, with an overall proportion of 11.2, which once again is very close to my figure (Five Cities Family Research Project Group 1985:428, 432).

These findings are striking because, in traditional Chinese contexts, a woman's separation from her family at marriage was virtually complete; it was largely for this reason that girls were said to be "useless," and it was for this reason that female children were frequently disadvantaged in access to education and, in times of shortage, to more basic necessities such as food and medical care. Many elderly women told me that, under present circumstances, daughters may be more helpful and "useful" than sons. While a daughter will come home to clean house for her parents, neither a son nor a daughter-in-law can be relied upon for such tasks. To the extent that daughters continue to support their parents, the pressure for sons may therefore be reduced.

According to data on remittances from the Five Cities Project, the absolute values sent and received in China's cities were small. The overall mean monthly amount was 13.5 RMB to 1.39 recipients; the average remittance received was 21.2 RMB from 2.19 providers (Five Cities Family Research Project Group 1985:429, 430, 432). These values per provider are close to those for Red Sky. One of the project's Shanghai surveys indicated that the vast number of remittance recipients were above a poverty line of 25 RMB per person per month, and the researchers concluded from this that remittances were given not primarily for economic reasons but out of filial deference. The data from Red Sky suggest that remittances were not simply an important filial obligation of the young. In fact they constituted a more than nominal contribution to income. Most recipients were elderly (93 percent were over 50); 77 percent belonged to nuclear households, and 7 percent lived alone. The proportion of Red Sky recipients with monthly incomes (wages plus pensions) below the community per family member mean (35.8 RMB) was 78 percent. Forty percent of all Red Sky women of ages 55 or over were receiving some kind of remittance from their children. Clearly, a substantial proportion of older people counted on help from their children, and in most cases the amounts contributed were more than symbolic.

Because women now commonly live alone with their husbands, are better educated than in the past, participate fully in the work force, and contribute to the domestic economy with substantial wages and remittances, they have reportedly acquired greater voice over the disposition of their own labor and income. Although they have not attained complete equality with men, even in the domestic sphere, there is little doubt that the husband's mother can no longer exert the influence she did when residence was with the husband's family, when women were raised to illiteracy, and when labor was confined to the home. These changes have contributed to shifting attitudes about the value of daughters, which in turn have likely influenced reproductive strategies.

FERTILITY AND THE DEMOGRAPHIC TRANSITION

Red Sky has experienced many of the economic and social changes that normally occur with urban-industrial development and that are expected to result in fertility decline—falling mortality, the expansion of access to education, the increasing involvement of women in the nondomestic work force, and the development of independent conjugal families. Of these, access to education and involvement in the work force merit special attention here.

Effect of increased access to education

Changes in education play a special role in various theoretical approaches linking socioeconomic modernization and fertility decline—in the "demographic transition" model (Notestein 1953; Coale 1975), in the household production model (DeTray 1976; Khan and Sirageldin 1979; Michael 1973; and Schultz 1973), in Easterlin's "synthesis" framework (see Easterlin et al. 1980), and in Caldwell's "wealth flows" theory (see, for example, Caldwell 1982a, 1982b, 1982c; and DeTray 1976). Empirical studies of these approaches have repeatedly confirmed a relationship between education and fertility in developed and developing societies. Several studies indicate that expanded access to formal education may depress fertility. For one thing, access to education often increases the age at which women marry, reducing their lifetime exposure to sexual intercourse (Bongaarts and Menken 1983:34–45; Cochrane 1979:146; and United Nations 1983:68–71). Rising education is also associated with lower infant mortality, which in turn is related to lower fertility (Caldwell 1979; LeVine 1980:S83–85). There is also evidence that education alters the perceived costs and benefits of children, as well as the perceived economic advantages of large families, commonly resulting in lower fertility (Arnold et al. 1975; Cochrane 1979:102–9, 112–15; McClelland 1983; Mueller 1972; and Speare 1973). Other studies indicate that education increases knowledge of contraception and fosters more favorable attitudes toward fertility regulation (Cochrane 1979:117–35). Some evidence suggests, however, that education may have a pronatalist effect. For example, increasing the level of education may decrease the rate and duration of breastfeeding and shorten postpartum sexual avoidance, thus reducing postpartum lactational amenorrhea and increasing exposure to sexual intercourse (Bongaarts and Potter 1983:24–25; Caldwell and Caldwell 1977:186–87, 200; Cochrane 1979:92; Nag 1983:164–68, 178–83; and Lesthaeghe et al. 1981:157–68).

My data set is too small to allow the sort of subtle controls that would make it possible to determine precisely how education exerts its effect on fertility in Red Sky (e.g., by controlling for differences in age at marriage, occupation, knowledge and use of contraception, and values with respect to family size and usefulness of children), but it has allowed me to determine whether or not there is any relationship between level of education and fertility (a zero-order correlation). In their analysis of the results of the recent Chinese fertility survey, Caldwell and Srinivasan concluded that "fertility is clearly higher among those least susceptible to government pressure and more likely to find their children productive assets." Using a measure of fertility that incorporates clearly completed fertility with that of younger women who may have ceased reproduction (the parity of women at 35, 40, and 45 years combined), they found that average number of live births varied with level of education and occupation in the expected direction (1984:76). The data for Red Sky also show a relationship between level of education and fertility in the expected direction; the higher the level of education the lower the mean parity achieved (Table 11).[5]

Effect of female participation in the work force

Although a relationship between fertility and female participation in the work force has also been asserted and explored in many studies, consensus has yet to be reached concerning the existence, direction, and causes of this relationship. Data from more developed countries generally suggest an inverse relationship between female employment and fertility (Blake

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[5] Results of the Five Cities Project also suggest a relationship between education and number of births in the expected direction, but the data are not controlled by age of mother. Since better-educated women are also generally younger women and those most subject to family planning pressures, such a control is essential (Five Cities Family Research Project Group 1985:523).

Table 11. Parity of women of ages 35 and over, by highest educational level attained: Red Sky, December 1981

Educational level	No.	Mean parity
Illiterate	206	4.1
Literate but no formal schooling	22	3.4
Primary school	112	3.1
Middle school	81	2.8
High school	54	2.8
Vocational school	5	3.0
University or college	15	2.4

1965; Freedman et al. 1963; Mason 1974; Pratt and Whelpton 1956; Ridley 1959; Westoff et al. 1963), but evidence from less developed countries indicates either a positive relationship or none at all (Concepción 1974; Gendell 1967; Goldstein 1972; Jaffe and Azumi 1960; Lee and Cho 1976; Stycos 1965; Stycos and Weller 1967).

According to one view, the higher a woman's potential wage rate, the greater the cost of children relative to alternative goods and thus the fewer children a couple will have (e.g., Becker 1960:209–40; Mason 1974:13; Easterlin 1973). Easterlin asserts, for example, that couples have subjective preferences that specify the combinations of children and alternative "goods." Assuming that children and other "goods" are "scarce," the number of children couples will choose to have will depend not only on preferences or "tastes," but also on the relative costs of children and other "goods" and on total income used to satisfy preferences. In general, rises in income permit an increase in the acquisition of all preferred "goods," including children, as long as there is no change in the relative cost of children. The more expensive children become, however, the fewer children couples will have (Easterlin 1973; Mason 1974; cf., Willis 1973).

Another view is that labor influences fertility through role images—"role traditional" women are less likely than "role modern" ones to view work as an alternative to motherhood and are therefore more likely to find satisfaction in having many children (Hoffman and Wyatt 1960; Blake 1965, 1971; Hoffman and Hoffman 1973). Some researchers have also argued that, in addition to a woman's education, the duration of her work experience before marriage, the quality of her jobs before and after marriage, and the timing of her first birth are potential indicators of her preferences and sex-role orientation, both of which in turn influence fertility later in life.

Still others have attributed importance to the role incompatibility that work outside the home creates for women (Collver and Langlois 1962; Jaffe and Azumi 1960; Stycos and Weller 1967; Weller 1968). Where the nuclear

Table 12. Parity of women of ages 35 and over, by type of employment: Red Sky, December 1981

Occupation	No.	Mean parity
None	152	4.0
Retired	99	3.7
Local collectives	62	4.1
Service	28	3.3
Industrial	102	3.0
Office	54	2.7
Technical or professional	37	2.5
Cadre	3	2.0

family prevails, as it does in most modern societies, childcare becomes a major problem. High fertility may thus become an obstacle to continued employment and to the benefits to be derived therefrom. The extent of incompatibility will vary with the type of work and the availability of surrogate baby tenders.

The size and nature of my data do not permit a detailed analysis of the factors that account for the relationship between work and fertility in Red Sky, but the data do give a general idea as to the existence of such a relationship. Although many large work units provide nursery facilities for their workers and although neighborhoods sometimes also provide childcare services, the demand for space in nurseries and kindergartens exceeds the supply, and such services are not without cost. Because childcare is still a considerable burden, women with no occupation, those retired, and those employed in neighborhood enterprises would be expected to have the highest mean parity. The data are consistent with this expectation (Table 12). Further, among employed women those in the most "modern" sectors have the lowest parity; industrial workers have lower parity than those in the service sector, and office and technical workers even lower. Although the number of female cadres is small, the fact that their mean parity is lowest is consistent with the expectation that the women most subject to antinatalist pressures would have the lowest parity.

Patterns of fertility change

Having considered some of the demographic, social, and economic changes that took place as Red Sky modernized, it is useful now to trace the changes in fertility to see if they can be explained by the demographic transition model. Did fertility decline, what was the pattern of decline, and to what extent did fertility fall in response to the changes thus far discussed?

From a remarkably low level during the 1937–41 period, the pattern of fertility change in Red Sky is one of recovery to Liberation, followed by the sort of fertility decline that the theory of demographic transition would lead us to expect given the rapid urban and industrial development that took place in Tianjin after 1949 (Table 13). After the data are disaggregated, however, the pattern becomes less straightforward. Figure 6 shows fertility change year by year from 1936 to the end of 1981, a pattern that no longer reflects regular, consistently falling fertility from the late 1930s.

Fertility was low in Red Sky during the decade or so before Liberation. Between 1938 and 1941, total fertility dropped from three or four children per woman to only two. After Liberation fertility approached five children per woman, surpassing pre-Liberation levels. From 1958 through 1960 there was another fertility drop. A short-lived and modest recovery ensued, but from 1962 there was another sharp decline until about 1966. This one brought fertility to a level even lower than during the decade or so before Liberation. The people of Red Sky had attained a level of fertility below replacement. Although there was some recovery between 1967 and 1969, fertility remained low even by pre-1949 standards. The decline resumed after 1969 until about 1976, after which there was a gradual and modest upward shift. In 1976 two major earthquakes ravaged Tianjin and killed at least 20,000 people, many of whom were children. The sharp rise in fertility immediately thereafter "has been explained, in part, as compensation for the loss suffered in the 1976 earthquake" (Lyle 1980:566–67). From 1966 to the end of 1980, fertility remained below replacement. In 1981 total fertility was 1.36, slightly lower than Tianjin's overall 1.65 (Banister 1984:250).

I also analyzed infant mortality in Red Sky and found that it has fallen steadily and sharply since even before Liberation (Figure 7). The sharp decline in infant mortality from 1931 to 1932 or 1933 and the increase from 1972 could both be artifacts of small numbers, but the precipitous rise from 1937 to 1939 is probably real. It corresponds to a period of unusual difficulty, with the peak occurring during the major flood of 1939. The drop in infant mortality since Liberation could be seen to be as much the result of the fact that more children were first borns, and therefore possibly healthier and better cared for, as of an overall decline in mortality. When I compared the mortality of first borns with that of other infants, however, the data indicated the same pattern of decline, interrupted only during 1937–43, when Tianjin suffered famine, violence, and flood. However, whereas infant (and child) mortality fell steadily and sharply from about 1943, reducing some of the pressure on parents to have children, the drop in fertility during the same period was neither steady nor continuous. There were even periods during which falling infant mortality was accompanied by rising fertility.

Table 13. Fertility, by five-year intervals: Red Sky, 1937–81

Interval	Age-specific fertility rate						General fertility rate	Total fertility rate	Mean marriage age
	15–19	20–24	25–29	30–34	35–39	40–44			
1937–41	28	147	170	131	53*	29*	89	2.8	19.2
1942–46	44	147	173	143	93	35*	110	3.2	20.3
1947–51	38	191	193	173	124	64	142	3.9	20.9
1952–56	52	211	227	199	132	68	166	4.4	22.7
1957–61	16	192	247	168	99	37	135	3.8	23.3
1962–66	—	125	192	125	72	34	91	2.7	25.7
1967–71	3	46	222	85	28	2	60	1.9	26.1
1972–76[a]	—	14	162	75	19	3	52	1.6	26.7
1977–81[a]	—	6	140	93	28	3	44	1.3	26.9

* based on <100 woman-years.

a. Adjusted to compensate for the exclusion of never-married women from the universe. Fertility during last decade is therefore exaggerated. Age at marriage has been rising. As a result, only married women of ages 15–19 and 20–24 at risk of conception are included. The data say nothing about their unmarried counterparts.

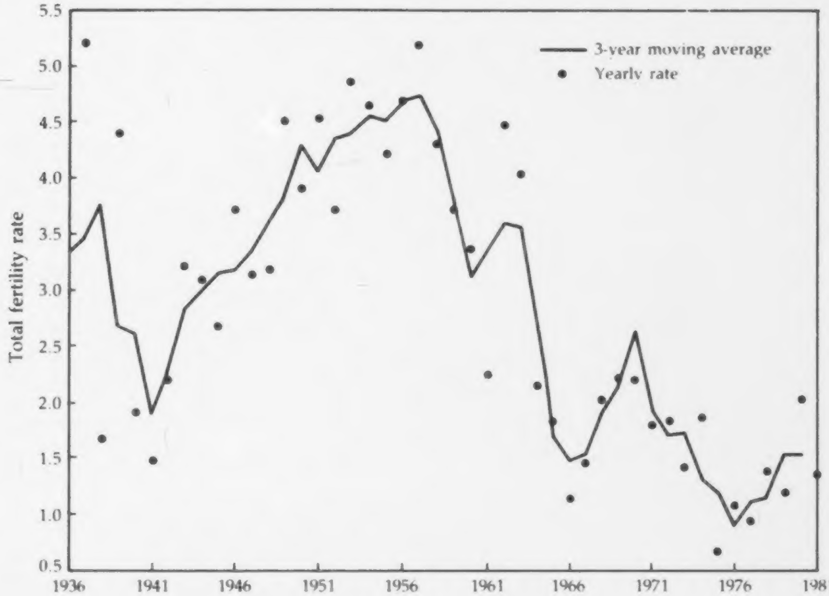

Figure 6. Total fertility: Red Sky, 1936–81
(three-year moving average and yearly rate)

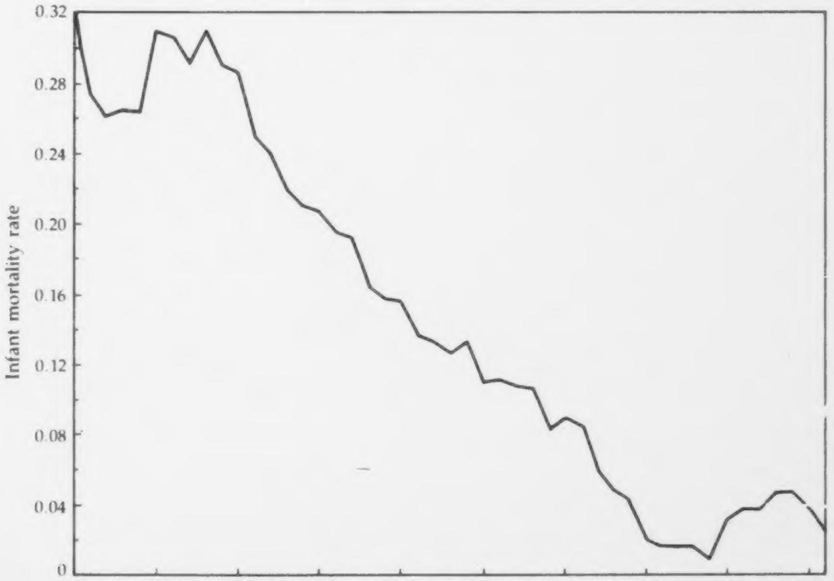

Figure 7. Infant mortality: Red Sky, 1933–79
(five-year moving average)

Examining the *pattern* of fertility change, then, leads to the conclusion that "modernization theory" and the model of demographic transition, which are essentially derived from the experience of now developed societies, provide an inadequate basis for anticipating the changes that occurred in Red Sky. The changes in fertility cannot be accounted for simply by increasing access to education, growing involvement of women in the work force, and developing independence of the conjugal unit. Nor can it be explained as a simple function of falling infant mortality, although this factor undoubtedly did contribute to substantially shorter birth intervals and a rise in fertility.

Increasing marriage age also had a negative effect on fertility, but it too cannot account for the pattern of fertility decline. Whereas the rise in age at marriage was gradual and reasonably constant, fertility decline was neither. Fertility increased during 1941-57 as marriage age rose. It increased again during 1960-1963, and again during 1966-69—both periods during which the mean age at marriage continued to go up. Another indication that changing age at marriage was not responsible for modulations in fertility is that changes in the fertility of *married* women closely parallel those of all women (Figure 6 and Figure 8). Again, the data show an increase

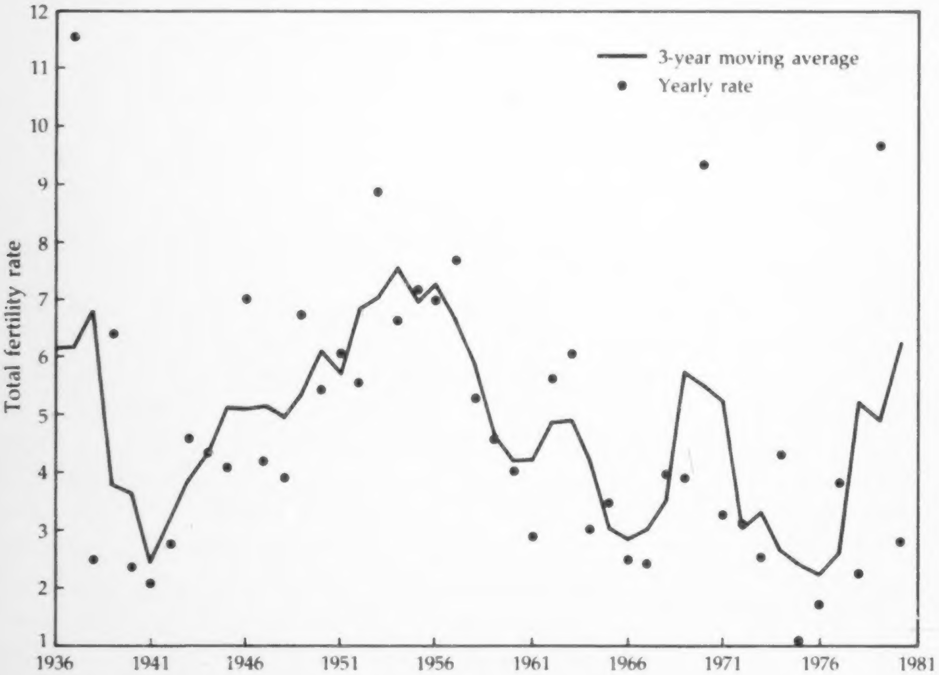

Figure 8. Total marital fertility: Red Sky, 1936-81
(three-year moving average and yearly rate)

in marital fertility through 1952–56, with a decline thereafter. How shall we account for the peculiar modulations evident in the fertility pattern? It might be useful to begin with the demography—to let changes in fertility signal the important, related changes in society. In my view, what needs to be explained is not the shortening of birth intervals and the rise in fertility after 1949, but the low fertility before. The post-Liberation fertility rise, in this view, was essentially a recovery.

Pre-Liberation Tianjin: context for low fertility

During the decade or so before 1949, fertility was apparently low in many Chinese cities. Data from Chengdu indicate that the mean number of births to women of ages 56 and over was 4.49 (Five Cities Family Research Project Group 1985:235). This figure is analogous to my figure of 4.7 for total marital fertility for women of ages 55 and over. Retrospective surveys in two Beijing districts also indicate low fertility for women born in 1914 and 1920. On the basis of published data, I calculate total fertility rates (ages 15–44) of 4.4 and 4.4 for Xicheng District women, and 4.9 and 3.8 for Haidian District women born in those years. The total fertility rate for Red Sky women born before 1927 was 3.6. The fertility rates of subsequent cohorts in Xicheng and Haidian are also not very different from those in Red Sky. Total fertility was 4.0 and 3.4 in Xicheng and Haidian respectively for women born in 1930; in Red Sky total fertility was 3.2 for women born during 1927–38. Women born in 1940 had rates of 2.0 and 2.8 in Xicheng and Haidian respectively, and those born in 1946 had rates of 1.4 and 1.6. The analogous rate for Red Sky women (born during 1939–50) was 1.9 (Liu Juyu 1983:22; Ye Yanru 1983:44).

Because I had not anticipated the low fertility of Red Sky women during the pre-Liberation period, my interviews and questionnaires did not include questions that would have allowed me to go directly to the causes. Nonetheless, enough is known about life in Tianjin in the years before Liberation to approach the question indirectly. Five factors in particular could well have contributed to a low level of fertility: (1) frequent and substantial spousal separation, (2) periodic famine, (3) high morbidity, (4) high infant and adult mortality, and (5), in view of the difficult living conditions that prevailed, deliberate attempts to limit the number of children born (all parities).

Fertility-depressing conditions were particularly acute from 1939, when a flood ravaged Tianjin and the surrounding countryside, producing a famine in 1940 and 1941. The situation improved little during the ensuing war years up to about 1946. Even before Japanese troops took control of the city in 1937, working and living conditions were not conducive to high fertility. The urban population was disproportionately male, as wives and children commonly remained in the countryside. Women who lived in the city suffered periodic famine and chronic poor health. Finally, city workers, both male and female, labored under incredibly poor conditions, suffering from exhaustion, illness, and separation from their spouses and loved ones.

From the time they took control of Tianjin, the Japanese, plagued by the Communist Eighth Route Army activities in the countryside around Tianjin, monitored and controlled movement within the city and also between the city and the countryside. Traveling to and from work was therefore risky and time-consuming. For many it was safer and more convenient to live at the factory. Visiting one's family in the countryside was even more difficult and dangerous because the Japanese were especially suspicious of people moving between the city and the rural areas. The Japanese also made frequent punitive expeditions and sorties to search either for the enemy or for labor to exploit in fighting the enemy. They sent troops to oversee harvests and collect grain taxes reportedly amounting to as much as 50 or 60 percent of harvest. As a result rural life and economy were seriously destabilized (Hershatter 1982:128, 185–86). One response to Japanese pressures was to try to dodge the Japanese by remaining in the countryside. Another was to leave the countryside altogether to live under the Japanese in garrison towns or in the city. Such migration usually involved spousal separation.

Much of what we know of life in Tianjin before Liberation is derived from interviews and general historical accounts. Little information is available in the form of systematic social surveys, apart from a useful 1926 study, conducted by Chinese researchers, of workers in two "model" factories—the Chiu Ta Salt Refinery and the Pacific Alkali Works—in Danggu, a town some 30 miles southeast of Tianjin. These factories were not typical, however. As the author of the published account indicates, "such a solicitous spirit shown for the well-being of their workers, it must be admitted, is but rarely met with in factories in this country" (Lin 1928:viii). Even so, the description of conditions in these factories might well have shocked Western readers of that time.

Workers at the Chiu Ta Salt Refinery were mainly young men; 75 percent were between the ages of 20 and 35. Most lived in factory quarters; few had families in Danggu. A large proportion of resident workers (59 percent) and of those with families in Danggu (39 percent) had been agricultural workers before coming to the refinery (Lin 1928:53, 70). Even before the Japanese took control of the area, workers commonly lived apart from their families, and movement into the city often resulted more from push factors, i.e., poverty and disorder in the countryside, than from some intrinsic attraction of the city or town (Lin 1928:53–54). Even before the 1930s, then, fertility may have been adversely affected by spousal separation and poverty.

Although 95 percent of workers with families in town were married, town-dwelling workers constituted only about one-quarter of the factory work force. Fifty-two percent of the far more numerous dormitory residents were also married (Lin 1928:55–58, 71–72). Thus, although a substantial proportion of workers were married, they had little access to their spouses. Similarly, of fifty resident workers surveyed at the Pacific Alkali Works, 40 percent had spouses living elsewhere (Lin 1928:101). Such a situation is hardly conducive to high fertility.

Although the two factories described in the 1926 study were models of industrial enlightenment at the time, the surveys indicate difficult and unsanitary working and living accommodations. From 1916 to 1927 at least, common laborers worked twelve hours a day, and skilled workers ten. Opportunities for home visits were rare (Lin 1928:22, 24). Despite unusually beneficent management at the two plants, illness and accidents were common, especially diarrhea, colds, skin inflammations, and burns (Lin 1928:40). Unhealthful, unsafe working conditions were particularly characteristic of the Pacific Alkali Works.

Conditions were even worse in more typical factories in the years before Liberation. The worker's life was one of unmitigated drudgery and fatigue, especially during the Japanese occupation and the subsequent civil war (Hershatter 1982:138–39). Apart from long, hard hours, workers had to endure hazardous, unhealthful conditions on the job and, often, dangers outside the workplace as well. As one of the informants in Gail Hershatter's study of pre-Liberation factory workers put it, "we were working fifteen, sixteen hours a day, and on the streets the Japanese were often seizing people for forced labor, so we didn't dare to go out" (Hershatter 1982:145). Marriage was not easy, visits to family were infrequent, and rarely were workers in a position to live away from their factories with their spouses (Hershatter 1982:134, 148, 150).

Although most migrants and urban workers were males, there were some female workers. Women, however, entered Tianjin's textile mills late and in small numbers. In 1929 only 9.14 percent of the cotton mill work force was female (13 percent if child labor is included). It was not until the Japanese took control of Tianjin that the proportion reached 39 percent; in 1947 women still constituted barely half of all mill workers (Hershatter 1982:188).

Most women employed in the mills during the 1920s were young and either unmarried or, if married, willing to live in dormitories apart from their spouses, as most mills had rules forbidding marriage. Women who married secretly and subsequently became pregnant were usually quickly discovered and promptly fired (Hershatter 1982:193–94). Once inside the mill, women faced ten-to-twelve-hour days in perpetual motion, under a light mist. Poor diet and unhealthful working conditions combined to make them highly susceptible to illness. Lung and eye problems were common. Disease spread quickly in the overcrowded, poorly ventilated dormitories, and industrial accidents were commonplace. Working-class neighborhoods had neither water nor sewage disposal. There too illness was commonplace and mortality high (Hershatter 1982:235–42, 378).

My data support Hershatter's findings that conditions were especially difficult during the Japanese occupation. Poor working conditions and fatigue were compounded by severe malnutrition to the point of starvation. The situation became desperate during and after the flood of 1939. Although the supply of food increased somewhat at the end of the occupation, partly because of flour imports from the United States, rampant inflation undermined the workers' buying power and encouraged hoarding by merchants. Hunger therefore continued. Excerpts from interviews I conducted in Tianjin convey something of the horror of those times. These recollections give evidence of illness and starvation, spousal separation, anxiety, and fear—circumstances clearly not conducive to even a moderate level of fertility.

> I was born and raised in Tianjin's North District. We were altogether eight people, my parents, five sisters, and myself. My youngest sister had to be sold to offset our poverty. My second youngest sister died early. Mother died at 39 in 1930. . . . Father, a wagon puller, died of throat cancer half a year later. He managed to find a mother-in-law for me before he died, and I left home to join her shortly before his death. . . .
>
> During those years we were constantly afraid. People were searched everywhere by the Japanese. . . . My husband initially lived apart from me, in Earthwall, where he worked as a long-term field laborer. When the landlord went bankrupt my husband found himself without employment. He tried to do some small business in the city, selling flowers and ice cream. After the Japanese arrived he couldn't even do that. They took him away to do labor for them. Things got a lot worse in 1939, when there was a great flood in Tianjin. Once again my husband was without work. He tried to work as a carrier on the river piers. . . . One day he dropped his burden into the water while carrying it off a ship. When he jumped in to retrieve it he was struck by a large, heavy piece of lumber. . . . His fingers were broken and mutilated and, from that time, he could do little work. For two years I washed clothing for the Japanese so we could eat. Then I managed to find a job in the wool factory where I worked until 1952, when I had to withdraw to care for my children. My husband managed to find a job in a textile factory but couldn't hold it because of his physical problems. In the end he became a street sweeper.—C.K. Huang

* * * *

> Conditions in Tianjin were especially difficult between 1937 and 1945, during which time the Japanese conducted nine campaigns to consolidate their control. Food shortage was a major problem. What flour was available was increasingly adulterated and, by 1940, one could find no flour at all. In the summer of 1939 there was a great flood. Water rose to the height of a man or even higher in some places. There were dead bodies floating everywhere. . . . Hunger stalked the city and surrounding countryside, driving people to extremes. There was looting and stealing. It took about two months for the waters to subside. During that time we ate anything we could find. . . . The stench of death was everywhere.
>
> We were all afraid of diseases, but the Japanese method of dealing with the problem frightened us as much. . . . The Japanese frequently erected roadblocks looking for people who were ill. People suspected of being ill were carted away in trucks. No one knows what became of them. These health checks were especially common during the summer of 1939 and people were so afraid of being taken away that they were reluctant to leave their homes. You could never know whether or not you would return. . . .
>
> Between 1941 and 1944 the Japanese conducted their seventh and eighth pacification campaigns. During that period even maize flour was not to be found. We ate flour made of broad beans, sorghum, and peanuts. Eventually that too was adulterated with wood shavings and even with stones. . . . In 1944 there was nothing at all to eat. We ate horse fodder—the bran or shells of peanuts mixed with yellow beans. Even for such foods prices soared out of sight. In the course of a single day food prices could rise four or five times. . . .
>
> Conditions were even more difficult in the countryside, where people were eventually reduced to eating the bark of trees. For about one year after the flood there were no harvests and people starved. In addition, the Japanese, concerned about activities of the Communist Eighth Route Army in the countryside, launched periodic searches and punitive expeditions, burning villages and killing people. Because conditions were so bad in the countryside, many rural people preferred to take their chances in the city or town. Many young men left their wives and children in the countryside and came to stay with friends or relatives in the city. Those discovered during nighttime house inspections were carted away as possible resistance fighters.—M.R. Liu

Tianjin after Liberation: political controls on fertility

Although marriage was legally and administratively delayed shortly after Liberation, birth intervals nonetheless became shorter and fertility rose. Women married later but had their children in quicker succession. Increasing access to education and increasing involvement in work outside the home does not seem to have curtailed childbearing during this early period. In fact, it could be argued that, had the age at marriage not been delayed and had women continued to devote their energies exclusively to domestic chores, fertility might actually have been even higher.

Post-Liberation fertility trends

According to one source (Pao and He 1960:62-63), only 7.5 percent of Tianjin's population growth in 1949 was the result of natural increase—the difference between birth and death rates. By 1953, however, the proportion attributable to natural increase had grown to 31.8 percent and, by 1956, to 35.1 percent. Much of Tianjin's growth was caused by an influx of rural people that was stimulated by growing industry. It is the natural increase, though, that most interests us here.

It resulted from falling mortality. That mortality declined is no great surprise. Not only had peace come to Tianjin, but also immediate steps were taken to stabilize the city's economy and improve living conditions. Sanitation and health improved, and there is evidence of substantial improvements in consumption. One source compares the situation for 455 workers in 1956 with data collected on the families of 132 craftsmen in 1928-29:

> We shall cite for comparison data on the life of 455 workers' families in 1956. Every member of a working family on the average consumed the following annually: high quality food = 263.8 chin, which is 103 chin more in comparison with the previous data; low quality food = 74.5 chin, i.e., 128.5 chin less than before; meat = 12.36 chin, or 5.15 chin more; eggs = 71, i.e., 69 more; fish = 20.15 chin, i.e., 13.46 chin more; sugar = 2.76 chin, or 2.74 chin more, and fabric = 27.28 ch'ih, or 17.28 ch'ih more. [One chin, or catty, equals 34.28 grams or 1.10 pounds; one ch'ih equals one-third meter or approximately 1 foot.] Every man had an average of 3.38 square meters of dwelling area, or 0.45 square meters more than prior to Liberation. Most of the workers now live in the newly constructed communal houses rather than in mud or clay houses, which prevailed before (Pao and He 1960:58, 67).

An indirect indication from the Red Sky data that improvements in living conditions had a felicitous effect on health is that the age at first menses declined; the mean ages at first menses for women of ages 45-49, 40-44, 35-39, 30-34, and 25-29 were 15.9, 15.5, 14.9, 14.9, and 14.7 years respectively.

Improvement in overall health and the decline in infant mortality after Liberation are changes that might be expected to have contributed to higher fertility, all other things being equal. Yet, whereas the *level* (*M*) of marital fertility in Red Sky increased from 0.49 in 1937-41 to 0.92 during 1967-81, total marital fertility began falling in the mid-1950s after an initial period of increase that started in 1941 (Figure 8). Looking at the data on marital

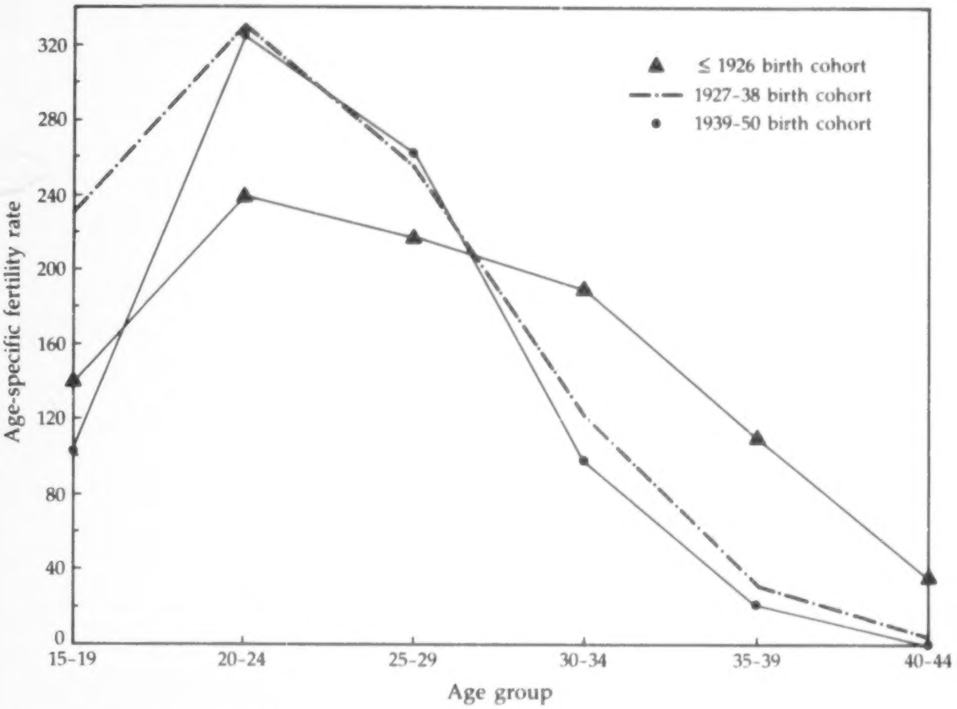

Figure 9. Age-specific marital fertility, by birth cohort: Red Sky

fertility in relation to birth cohorts helps to make sense out of this apparent contradiction (Figure 9).[6] The marital fertility of women who were in their peak childbearing years just after Liberation (those born during 1927-38) rose dramatically during their younger years, compared with women in the earlier, pre-Liberation cohort. Even though the average age at marriage was increasing, many women born during 1927-38 married young (at ages 15-19). Their initial marital fertility was higher than that of earlier-born women, producing a higher *level* of fertility. They ended their childbearing earlier, however, to a large extent cancelling out their higher early fertility. The most important difference between women born during 1939-50 and those born earlier is that they exhibit markedly lower fertility from ages 25 to 29. This is because women in this cohort were most subject to programs and policies intended to delay marriage and to limit childbearing during marriage.

Could it be that the sharp rise in early marital fertility following Liberation is more apparent than real, an artifact of the way age-specific fertility

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[6] The peak reproductive ages (20 through 29) for women born before 1927 occurred before Liberation. For those born during 1927-38 it was after Liberation but before the Cultural Revolution. The peak for women born during 1939-50 occurred after 1966.

Table 14. Duration-specific legitimate fertility, by years married and birth cohort (first marriage): Red Sky, December 1981

Years married	Duration-specific fertility rate ≤1926 birth cohort	 1927-38 birth cohort	 ≥1939-45 birth cohort
<1	40	75	149
1	255	480	591
2	242	295	246
3	191	267	214
4	220	306	157
5	201	324	183
6	243	200	124
7	228	200	96
8	229	241	82*
9	193	135	68*
10-14	171	102	22
15-19	111	24	—
≤20	57	5	—

* Based on <100 woman-years.

is calculated? Could the increase in fertility for women of ages 15–19 simply result from the fact that because women married later—closer to 19 than to 15—they contributed fewer years to the calculated rate? One way to answer these questions is to look at yet another measure of fertility, the duration-specific legitimate fertility rate, which analyzes fertility not by age but by length of time married. If the increase in fertility was real, regardless of age at marriage, women married the same length of time in the various cohorts should have different fertility rates. A comparison of the first two cohorts of women (Table 14) shows that for any duration of marriage up to and including five years, women born during 1927-38 had substantially higher fertility than others. Since women born during 1939–50 were under special pressure to curtail births, we would expect them to have had their first children early in marriage and the lowest fertility thereafter. Their higher fertility should therefore be evident only during the first year or so of marriage. The results are ambiguous for the second year of marriage, but we do find that these women had the highest rate of fertility during the first year.

The increase in age at marriage conceivably could have contributed to the higher early fertility of the post-Liberation cohort in another way. It is possible that women who marry later are more fertile simply because they are older when they begin having children. Table 15 compares the total first marital fertility (ages 30–44) of women in the three cohorts by age at marriage. It shows that, in all cohorts, the relationship between age at

Table 15. Age-specific fertility in first marriage among women 30-44 years of age, by birth cohort and age at marriage: Red Sky, December 1981

Birth cohort	Age-specific fertility rate						Total marital fertility rate
	15-19	20-24	25-29	30-34	35-39	40-44	
≤1926							
Married age 15-19	147.2	215.1	175.1	165.7	101.0	24.1	1.45
Married age 20-24	—	265.9	260.9	205.2	86.7	23.6	1.57
Married age 25-29	—	—	338.0	226.1	125.5	54.8	2.03
1927-38							
Married age 15-19	246.1	302.0	207.8	102.4	8.0	—	0.55
Married age 20-24	—	363.1	270.0	90.0	17.1	7.3	0.57
Married age 25-29	—	—	295.1	200.0	58.3	8.9	1.34
1939-50							
Married age 15-19	169.0*	240.0*	280.0*	40.0*	—	—	0.20
Married age 20-24	—	419.3*	150.0	30.6	11.5*	—	0.21
Married age 25-29	—	—	323.3	108.9	21.9	—	0.65

* Based on <100 woman-years.

Table 16. Duration-specific legitimate fertility during first four years of marriage, by age at marriage and birth cohort: Red Sky, December 1981

	Duration-specific legitimate fertility rate	
Age at marriage	≤1926 birth cohort	1927–38 birth cohort
≤19	151	249
20–24	202	318
25–29[a]	282	277

a. The difference in rates for this age group is not statistically significant at the 0.05 level.

marriage and fertility was in the direction suggested: women who married at ages 25–29 had the highest fertility rates, and those who married at ages 20–24 had higher fertility rates than those who married younger. As Table 16 indicates, however, *even when age at marriage is controlled for,* duration-specific fertility rates during the first four years of marriage are generally higher for women born during 1927–38 than for those born earlier. I have concluded, then, that the increase in early fertility for women born during 1927–38 was neither a product of the way age-specific fertility is calculated nor the simple result of later marriage. The increase in duration-specific fertility suggests that women in the second cohort achieved the same level of fertility as pre-Liberation women despite a more marked fertility decline with age. They had as many children as their predecessors but had them sooner. Consistent with this conclusion is the finding that the intervals to each of the first three births decreased (Table 17). The rate and duration of breastfeeding also declined (Figure 10).[7] Since breastfeeding inhibits conception, this could well have contributed to shorter second- and third-birth intervals; changes in breastfeeding would not account, however, for the documented shorter interval between marriage and first birth.

Introduction of family planning

Family planning, in the sense of programs specifically intended to limit family size, was first systematically introduced in Tianjin during 1954–57 (Lyle

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[7] In a separate study done in collaboration with Wang Ching of the Beijing Institute of Food Research, data show that the rate and duration of breastfeeding dropped in Red Sky as women increasingly acquired formal education, as they became involved in full-time work outside the home, as they adopted neolocal postmarital residence, as their income increased, and as their rural origins decreased (Pasternak and Wang 1985:433–66). Data from the Five Cities Project also indicate a decline in the rates and duration of breastfeeding but considerable difference among cities in the degree of change. Compared with other cities, the decline has been less serious in Tianjin (Five Cities Family Research Project Group 1985:548–57).

Table 17. Mean birth intervals of women in first marriage, by birth cohort: Red Sky, December 1981

Interval	Born ≤1926		Born 1927-38		Born 1939-50		Born ≥1951	
	No. of intervals	Mean (months)	No. of intervals	Mean (months)	No. of intervals	Mean (months)	No. of intervals	Mean (months)
Marriage to first child[a]	211	42.0	159	23.0	124	15.6	57	11.7
First to second child	192	41.8	155	37.0	91	43.5	2	—
Second to third child	153	44.7	116	38.9	17	—	—	—
Third to fourth child	117	38.5	63	41.9	3	—	—	—
Fourth to fifth child	80	39.2	27	—	—	—	—	—
Fifth to sixth child	48	43.7	3	—	—	—	—	—

Note: Means provided only where number of intervals ≥50.

a. Intervals of less than nine months excluded.

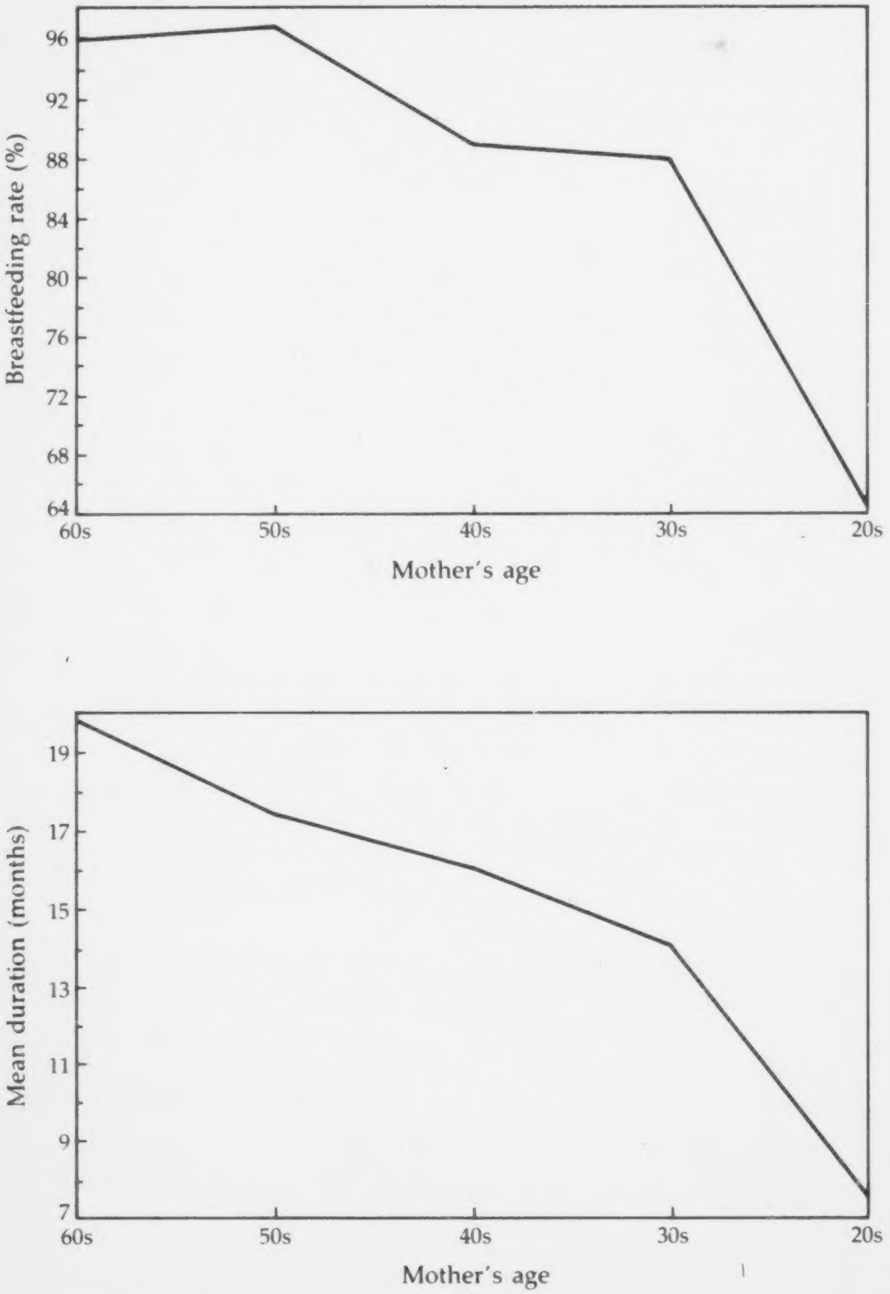

Figure 10. Breastfeeding rate and duration, by mother's age: Red Sky

1980). The goal of this early effort was more to improve maternal health through family limitation than to limit family size by controlling childbirth. Official support for family planning was demonstrated as early as 1955 with the spread of services and the organization of educational campaigns (Kane 1985:87). The program focused on literate urban dwellers, the goal being to free women for production. During the latter part of 1955, cadres in state agencies and enterprises in Hebei Province became the subject of a family planning campaign. One year later the campaign was extended to all urban dwellers and to industrial and mining workers (Kane 1985:87–88).

In 1958 and 1959, during the earliest years of the Great Leap Forward, the Chinese government changed its position and argued that family limitation was to be avoided and that China's population was not large enough. Labor was mobilized on a massive scale, and attempts were made to "liberate" female labor—to move women out of the home and into the factories. In addition to work done in the factory during the day, evenings were given to the manufacture of steel in so-called "backyard blast furnaces." Spouses were often separated during the day and at night. People came home exhausted at the end of a work day, with little energy for eating and virtually none for sex.

During the "three bad years" from 1959 to 1961, production and commerce came to a standstill and severe food shortages launched massive migrations to the city, migrations that often involved conjugal separation. The sharp rise in mortality that occurred during those years would have conspired with exhaustion, stress, and famine to lower fertility. Ansley Coale reports that excess deaths in China (those above a linear trend) from 1958 to 1963 were about 27 million, when mortality is adjusted for understatement (Coale 1984:7). It is interesting that, although mortality in general soared in China during the "three bad years," the data from Red Sky show no noticeable increase in infant mortality. This may be because the numbers are so small, but it could also indicate that the drop in fertility that occurred during those years was less due to higher infant mortality than to other factors, such as exhaustion, famine, and lowered coital frequency.

The sharp decline in fertility beginning in 1962 had a different cause. By late 1961 the bankruptcy of the Great Leap Forward had become all too evident, and there was a shift to less radical policies and programs. Associated with that shift was a renewed interest in family planning. From 1962 an effective, well-administered family planning program was initiated in Tianjin. Measures were taken to create the kind of infrastructure, and to carry out the sort of mass mobilization, that would ensure effective and systematic family limitation. This time the program was specifically aimed at controlling reproductive behavior to limit family size.

Fertility fell rapidly in response (Figure 6). The decline was interrupted only during the Cultural Revolution's (1966–76) baby boom, which Red Sky residents attribute to a collapse of administrative and industrial efficiency in the face of political chaos (see Lyle 1980:553–64). Factory efficiency was greatly reduced because workers were constantly involved in political meetings and because discipline crumbled in the wake of purges of cadres and administrators. Production slowed dramatically, leaving workers with free time to spend at home.

Efforts to restore interest in family limitation were renewed by 1970, and fertility once again declined, reaching an all-time low in 1976, the year of a major earthquake. The recovery thereafter was slight. With the fall of the "Gang of Four" in 1976 and the subsequent restoration of less radical policies, couples were actively pressured to avoid having more than two children. Late marriage, single-child families, delayed childbirth, and wide birth spacing for women determined to have a second child were stressed. Birth targets were allocated downward through the administrative hierarchy, from the national level to the work unit. Most units had family planning committees that charged specific individuals with responsibility for implementing family planning policies. During my stay in Tianjin I heard complaints about inequities in the allocation of work-unit birth targets. I was told that, although some units had more newly married people than others, planning was not so detailed and efficient as to take such differences into account. As a result, some work units consistently exceeded their targets whereas others did much better.

Work units created incentives for couples formally to register as single-child families. Some work units offered couples with one-child contracts a monthly 5 RMB salary supplement, which was to continue until the child reached age 14. If the couple had a second child they were to return the rewards. Longer maternity leaves were commonly allowed to contract mothers—six months paid leave instead of the normal fifty-six days. A few work units were said to give special consideration to contract couples in the allocation of housing. During the time I was in Tianjin, however, such allocations were not commonplace. I also found no evidence that children of contract families had special access to nurseries or other schools, and it is still too early to know whether they will actually enjoy priority in the assignment of jobs, as is sometimes claimed.

In 1979 municipal authorities in Tianjin and Beijing publicized policies designed to discourage third- or higher-parity births. According to published regulations, the parents of third-parity infants were to be docked 10 percent of their annual salary until the child reached age 14. For parents of fourth- and fifth-parity children, salaries would be reduced by 15 and 20 percent respectively.

In Tianjin couples were pressed to wait four years before having a second child. Those who did not comply were, in theory at least, to be docked 10 percent of their joint monthly salary (Croll 1985:196; Lyle 1980:555–56). Even if couples were unwilling to sign single-child contracts, a second conception meant repeated visits from work-unit cadres, who came to urge abortion. Couples who exceeded two births drew more substantial criticism and pressure, and registration of such births was often delayed for several months, during which time rationing rights were withheld.

Enforcement of the two-child limit was still not strict, however, during the time I was in Tianjin. Reports from China since my departure, letters from friends still in Tianjin, and information obtained during a visit to that city indicate that family limitation has been more systematically and forcefully pursued since 1981. Stronger pressure is now reportedly exerted to discourage couples from having more than one child. Couples who are determined to have a second child are pressed to delay for forty-eight months. Women who are pregnant with a second child are pressured to seek an abortion, and sterilization is reportedly actively urged for all women who have had two children (see Bongaarts and Greenhalgh 1985).

Effectiveness of family planning efforts

Although family planning efforts were less strictly enforced when I was in Tianjin, they were nonetheless effective; by 1976 fertility had reached an all-time low. The success of the new family planning efforts can also be seen from an analysis of the sibling positions of children born since 1949 (Figure 11). Virtually all children born since 1979 are first children; very few second children and no third children have been born in recent years. Data from the sample census indicate a high proportion of first-born infants for the city generally: 78.5 percent of all children born in 1981 were first borns, 16.2 percent were second children, and 5.3 percent were third- or higher-parity births (Banister 1984:250; see also Lyle 1980:562).

I mentioned earlier that rising age-specific marital fertility rates resulted from a shortening of some birth intervals and that the most important interval in this regard was the first, that between marriage and first birth. The second birth interval decreased around the time of Liberation but then began to increase again in 1952. With the institution of more systematic family limitation efforts in 1962, the second birth interval lengthened substantially, and in recent years, with the increasing emphasis on single-child families, the second interval has lengthened even more. That the second birth interval has been increasing in Red Sky even as the rate and duration of breastfeeding has been declining further indicates the effectiveness of the family planning efforts.

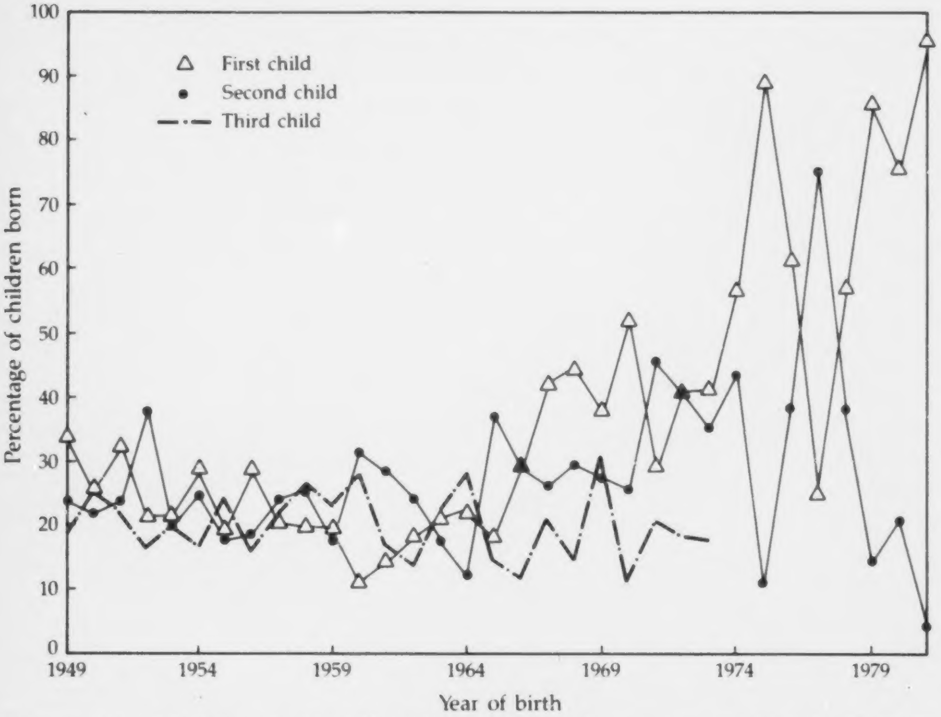

Figure 11. Children in Red Sky, by sibling order and year of birth: 1949–81

Parity progressions also reflect the influence of political and economic changes (Table 18). As with the earlier finding that fertility was low in pre-Liberation Tianjin, the data on parity progressions show an unusually high proportion of women having no children at all among those married from 1927 through 1941. The proportions at each parity are also lower before 1942 than after. The proportions having more than two children decline beginning with the 1947–51 marriage cohort, suggesting some parity-specific attempt to limit childbirth. We note a sharp drop in the proportion of 1972–76 marriage cohort women having a second child.

Family planning efforts have reportedly been more effectively implemented in Shanghai and in Beijing (Croll 1985:200; Kane 1985:95; Tien 1985:122, 126–27). It is not surprising to discover, then, that fertility rates are somewhat higher in Red Sky than in those cities. Data from urban Shanghai indicate a somewhat higher proportion of first-born and a lower proportion of second-born children in 1978–79. In Shanghai 80 percent of all children born from October 1978 to September 1979 were first-parity (Gu Xingyuan et al. 1981:231); in Tianjin the proportion was only 71 percent for the two-year period 1978–79. Also consistent with the evidence for lower fertility and more effective family planning in Beijing are data suggest-

Table 18. Parity of women, by year married: Red Sky, pre-1926 to 1981

Year married	Number	Percentage achieving each parity									
		0	1	2	3	4	5	6	7	8	9
≤1926	26	—	100	96	81	54	35	31	19	—	—
1927–31	24	13	88	75	54	50	33	25	8	—	—
1932–36	43	8	93	72	58	46	37	23	12	7	—
1937–41	56	11	89	84	70	61	41	25	7	—	—
1942–46	86	6	94	88	80	66	44	21	11	2	1
1947–51	73	5	95	89	74	52	27	4	—	—	—
1952–56	70	4	96	93	79	36	7	—	—	—	—
1957–61	53	1	98	89	45	19	2	—	—	—	—
1962–66	27	7	93	89	37	—	—	—	—	—	—
1967–71	57	2	98	84	5	—	—	—	—	—	—
1972–76	38	3	97	50	—	—	—	—	—	—	—
1977–81	94	25	75	1	—	—	—	—	—	—	—

ing greater use of contraceptives there. According to one survey, the percentages of women born in 1920, 1930, 1940, and 1946 who had used contraceptives were 7.8, 34.9, 94.9, and 95.7 respectively (Liu Juyu 1983:22). The percentages for Red Sky women born during analogous periods—before 1926, 1927-38, and 1939-50—were 7.4, 28.6, and 78.7.

Because the Chinese fertility survey of 1982, like my own in Red Sky, was based on retrospective data, it provides a basis for comparison with urban China generally since 1950. Figure 12 shows that, although the level of fertility has been consistently lower in Red Sky, the overall pattern has been very similar.[8] A likely reason for Red Sky's lower fertility is that the fertility survey incorporated data from many smaller cities and towns where family planning has been less systematic and effective and where rural influences and traditions are likely to have been more persistent. The Chinese define an area as "urban" if it has a population of more than 2,000, at least half of which is employed in nonagricultural pursuits (Kane 1985:83). That the two curves converge after 1972 suggests that family planning efforts may have become increasingly effective in China's smaller cities and towns in recent years.

There is some evidence that fertility has recently risen in Red Sky and in China generally. The data on marital fertility in Red Sky (Figure 8) indicate such a rise since 1976. Earlier I reported that, although the marriage law revision in 1980 increased the legal age at marriage from 18 to 20 for women, administrative procedures that had formerly operated to keep marriage age well above the legal minimum were relaxed. This was partly because "of the social problems created by postponing marriage past age 23 in a society in which women are traditionally married soon after menarche and in which sexual relations among unmarried people are not socially acceptable" (Coale 1984:45). The new law was thus accompanied by a marriage boom. According to Coale:

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[8] "Urban" in the 1982 census referred to people living in a city or town designated urban by the State Council whether or not they were registered there and eligible for commercial grain rations. An area was designated a town if industries, commerce, and handicraft enterprises were concentrated and if the population exceeded 3,000 persons of whom 70 percent were not involved in agriculture, or if the population numbered between 2,500 and 3,000 with over 85 percent nonagricultural. Places with populations over 100,000 were designated cities, as were places with smaller populations that were provincial capitals or centers of commerce and heavy industry (Goldstein 1985:6-17). Altogether, 2,664 towns and 236 cities were designated "urban" for census purposes. The 1982 fertility survey used a more restricted definition that required entitlement to commercial grain rations as well as urban residence (Banister 1984:264-65; Goldstein 1985:10-11). This difference can be of considerable importance in a consideration of rural-urban differences. In this particular case, however, although I have used the census definition, the results are nonetheless comparable to those of the fertility survey because no residents of Red Sky were without urban registration and entitlement to commercial grain rations.

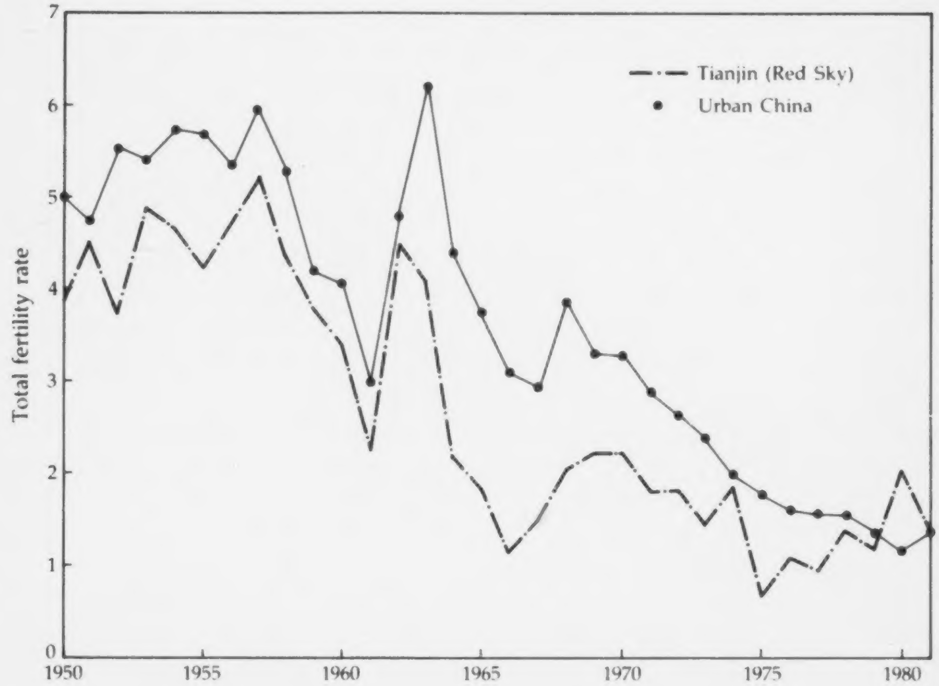

Figure 12. Total fertility: Red Sky and urban China, 1950-81

> . . . the increase in mean age at marriage that was the principal source of low total marriage rates also produced a reduced number of women in the early durations of marriage. The cessation and slight reversal of the increase in age at marriage, plus the marriage boom associated with the new marriage law of 1980, produced a phenomenal increase in the total marriage rate and a commensurate increase in the number of marriages of short duration. A consequence is that a rise in overall fertility by 18 percent (from a TFR of 2.41 in 1979 to one of 2.85 in 1982) would have occurred with constant fertility by duration of marriage (Coale 1984:54).

Although Red Sky residents also noted the relaxation of administrative pressures for late marriage, the mean age at marriage for women has not declined. In December 1979 a proclamation on late marriage and planned birth issued by the Tianjin Municipal Revolutionary Committee was put into effect. It established "optimal" marriage ages of 25 for urban men and women, or if one partner was over 28, the other could be 24. The proportion of women actually marrying below age 27 was slightly (but not significantly) lower for women married during 1979–81 than for those married during 1970–78 (62 percent compared with 69 percent). Another aspect of the relaxation of administrative controls on marriage may have, in this particular case at least, contributed to a rise in marital fertility. Residents indicate that pressures to delay the birth of their first child have also been reduced since 1976. Authorities reportedly now believe that "getting in line" for permission to have a child is less urgent precisely because marriage continues to be late and because the proportion of couples having a second child has dramatically diminished. It is felt that, under such circumstances, allowing an earlier first birth does not adversely affect overall family planning goals and is better for the health of mother and infant. This softening of the spacing requirement may well have continued to the short first-birth interval of women born after 1950 noted earlier.

In general, family limitation has been more effective in China's cities than in the rural areas, for important economic and psychological reasons (Coale 1984:58–62). First, family income is derived from wages, and children are not allocated employment until they are about age 18. Unlike the situation in the countryside, where children become productive much earlier, urban youngsters are an economic burden until they find work. Moreover, newly married urban couples commonly live independently and are therefore less available to help their parents. Because most urban workers now receive pensions, they are also less dependent on their children for old-age support than are their rural counterparts (see Davis-Friedmann 1985:154–57).

The prevalence of neolocal postmarital residence and the fact that women earn wages mean that parents can sometimes look to daughters as well as to sons for help. I have already observed that daughters are more likely to send money to their parents than sons, and that the amounts they send do not differ significantly from remittances sent by sons. Married daughters often visit and help with shopping, housework, cleaning, care in time of illness, and childcare. There is less pressure than in the countryside, therefore, to have some minimal number of sons. Many of the women I interviewed claimed that, in present circumstances, daughters may actually be more valuable than sons. While this may be an overstatement, there can be little doubt that daughters are more likely sources of support than ever before, whereas daughters-in-law are less dependable now than when they were economically and physically under the control of their mothers-in-law. Bonds of affection and loyalty between daughters and their parents are no longer severed at marriage.

CONCLUSIONS

After Tianjin's flood in 1939 and the two disastrous crop years that resulted from it, fertility in Red Sky began a gradual recovery. By Liberation, fertility had reached preflood and pre-Japanese levels. From 1949 fertility continued to rise as birth intervals decreased. Fertility peaked in 1957 and then plummeted from 1959 to 1961. A short recovery in 1962 was immediately followed by another deep drop to an unprecedented low, well below replacement levels, in 1966. From 1966 to 1970 there was a modest recovery, but only to replacement levels, and from 1970 fertility once again gradually fell below replacement level.

What accounts for these modulations? Changes occurring after Liberation might be expected to have inhibited the fertility of women in Red Sky either by increasing the costs or by decreasing the rewards of having children. As families increasingly count on income women earn outside the home, for example, the value of women's domestic work declines and the cost of having a woman remain at home to care for children increases relative to the income she might obtain by going out to work. The involvement of women in nondomestic work did increase substantially after Liberation, but fertility continued to rise until 1958. The drop in fertility that then occurred and the fertility changes that took place thereafter cannot be accounted for by shifts in the degree to which women worked outside the home.

Education became fully accessible to women after Liberation, and more time and effort are now spent preparing the occupational and economic basis of marriage. This change too might increase the cost side of whatever formula governs childbearing decisions. Not only are adults interested in taking advantage of schooling and therefore willing to delay marriage, but there are also costs involved in sending children to school. Furthermore, whatever financial contribution children might make to the domestic economy cannot begin until they have left school and have been assigned a job. Often they marry and move away shortly thereafter. Although the burden of childbearing has therefore increased and there has been a gradual and constant rise in age at marriage, the fall in fertility has not been constant or continuous.

Not only have the costs of having children increased relative to the benefits, but separation of the conjugal unit from both parental families and growing independence of the conjugal pair have reduced the effectiveness of pronatalist pressures hitherto exerted by mothers-in-law and mothers anxious to ensure support in their old age. But the crucial shift to neolocality had begun even before Liberation and, as we have seen, fertility initially rose even as women became better educated, more involved in the work force, and more independent. Whatever contribution conjugal independence and increasing self-reliance may have made to declining fertility, then, it cannot account for the overall pattern of change after 1949.

All of these changes—involvement of women in the work force, increased access to education, and the growing independence of married couples—should, theoretically, have conspired to produce a drop in fertility after 1949. Although a fertility decline did occur, the pattern of change suggests that fertility was profoundly affected by factors other than those outlined above. In contrast to the position taken elsewhere by Whyte and Parish (1984), who argue that many of the changes that have occurred in China since Liberation are expectable results of a more general modernization process, my view is that, as far as changes in fertility are concerned, more classical theories of "modernization" seem to have little predictive or retrodictive value. Nor can it be argued that some general "socialist" model of modernization would be any more useful. Rather, the factors most responsible for the overall pattern of fertility change since 1949 have been fundamentally political so that the pattern of fertility change has been as distinctive as China's version of socialism. It is therefore more useful to explore the relationship between the two more directly than to attempt to force a more general model on the evidence. What I am suggesting, in short, is that modernization theory and the model of demographic transition are not refined enough to anticipate the fertility transformations that occurred in Red Sky. It is more useful to begin with the demographic pattern, using it to signal potentially important economic, political, or social causes, than to begin with specific social changes, assuming that they would have a powerful effect on fertility change. In this paper I have used fertility to identify some of the social, political, and economic changes that may have been crucial. But my observations have only pointed the way to areas of ethnographic and ethnohistorical research that will be necessary to test and refine these speculations.

REFERENCES

Arnold, Fred, Rodolfo A. Bulatao, Chalio Buripakdi, Betty Jamie Chung, James T. Fawcett, Toshio Iritani, Sung Jin Lee, and Tsong-Shien Wu

1975 *The Value of Children: A Cross-National Study,* Vol. 1, *Introduction and Comparative Analysis.* Honolulu: East-West Population Institute, East-West Center.

Banister, Judith

1984 An analysis of recent data on the population of China. *Population and Development Review* 10(2):241-71.

Becker, G.S.

1960 An economic analysis of fertility. In *Demographic and Economic Change in Developed Countries,* pp. 209-40. Princeton, NJ: Princeton University Press.

Blake, Judith

1965 Demographic science and the redirection of population policy. In *Public Health and Population Change,* edited by M. Sheps and J.C. Ridley, pp. 41-69. Pittsburgh, PA: University of Pittsburgh Press.

1971 Reproductive motivation and population policy. *Bioscience* 21(5):215-20.

Bongaarts, John, and Susan Greenhalgh

1985 An alternative to the one-child policy in China. *Population and Development Review* 11(4):585-617.

Bongaarts, John, and Jane Menken

1983 The supply of children: A critical essay. In *Determinants of Fertility in Developing Countries,* Vol. I, edited by Rodolfo A. Bulatao and Ronald D. Lee, pp. 27-60. New York: Academic Press.

Bongaarts, John, and Robert G. Potter

1983 *Fertility, Biology and Behavior: An Analysis of the Proximate Determinants.* New York: Academic Press.

Caldwell, John C.

1979 Education as a factor in mortality decline: An examination of Nigerian data. *Population Studies* 33:395-413.

1982a The failure of theories of social and economic change to explain demographic change: Puzzles of modernization or Westernization. In *Theory of Fertility Decline,* edited by John C. Caldwell, pp. 269-300. New York: Academic Press.

1982b Mass education as a determinant of the timing of fertility decline. In *Theory of Fertility Decline,* edited by John C. Caldwell, pp. 301–30. New York: Academic Press.

1982c *Theory of Fertility Decline.* New York: Academic Press.

Caldwell, John C., and Pat Caldwell

1977 The role of marital sexual abstinence in determining fertility: A study of the Yoruba in Nigeria. *Population Studies* 31:193–217.

Caldwell, John C., and K. Srinivasan

1984 New data on nuptiality and fertility in China. *Population and Development Review* 10(1):71-79.

Chen, Pi-chao

1985 Birth control methods and organization in China. In *China's One-Child Family Policy,* edited by Elisabeth Croll, Delia Davin, and Penny Kane, pp. 135–48. New York: St. Martin's Press.

China Daily News

2 January 1986.

China Yearbook 1937–45

1947 New York: The MacMillan Co.

China Yearbook 1950

1950 New York: Rockport Press, Inc.

Coale, Ansley J.

1975 The demographic transition. In *The Population Debate: Dimensions and Perspectives,* Vol. I, pp. 347-55. New York: United Nations.

1984 *Rapid Population Change in China, 1952–1982.* Washington, D.C.: National Academy Press.

Cochrane, Susan H.

1979 *Fertility and Education: What Do We Really Know?* Baltimore, MD: The Johns Hopkins University Press.

Collver, Andrew, and E. Langlois

1962 The female labor force in metropolitan areas: An international comparison. *Economic Development and Cultural Change* 10(4):367–85.

Concepción, Mercedes B.

1974 Female labor force participation and fertility. *International Labor Review* 109:503–17.

Croll, Elisabeth

1985 The single-child family in Beijing: A first-hand report. In *China's One-Child Family Policy,* edited by Elisabeth Croll, Delia Davin, and Penny Kane, pp. 190–232. New York: St. Martin's Press.

Davis-Friedmann, Deborah

1985 Old age security and the one-child campaign. In *China's One-Child Family Policy,* edited by Elisabeth Croll, Delia Davin, and Penny Kane, pp. 149–61. New York: St. Martin's Press.

DeTray, Dennis

1976 Population growth and educational policies: An economic perspective. In *Population and Development: The Search for Selective Interventions,* edited by Ronald G. Ridker, pp. 182–209. Baltimore, MD: The Johns Hopkins University Press.

Easterlin, Richard A.

1973 Relative economic status and the American fertility swing. In *Family Economic Behavior: Problems and Prospects,* edited by E. Sheldon, pp. 170–223. Philadelphia: J.B. Lippincott.

Easterlin, Richard A., Robert A. Pollak, and Michael L. Wachter

1980 Toward a more general economic model of fertility determination: Endogenous preferences and natural fertility. In *Population and Economic Change in Developing Countries,* edited by Richard A. Easterlin, pp. 81–135. Chicago: University of Chicago Press.

Five Cities Family Research Project Group

1985 *Zhonnguo Chengshi Jiating: Wu Chengshi Jiating Diaocha Baogao Ji Zeliao Hueibian* [The Chinese Urban Family: Five Cities Family Survey Report and Collected Data]. Jinan: Shandong People's Publishing House.

Freedman, Ronald, D. Goldberg, and Doris Slesinger

1963 Current fertility expectations of married couples in the United States. *Population Index* 29:366–91.

Gamble, Sidney D.

1921 *Peking: A Social Survey Conducted Under the Auspices of the Princeton University Center in China and the Peking Young Men's Christian Association.* New York: Doran.

Gendell, M.

1967 The influence of family building activity on women's rate of economic activity. In *Proceedings of the World Population Conference, Belgrade, 1965,* Vol. 4: *Migration, Urbanization, Economic Development,* pp. 285–86. New York: United Nations.

Goldstein, Sidney

1972 The influence of labor force participation and education on fertility in Thailand. *Population Studies* 26:419–36.

1985 *Urbanization in China: New Insights from the 1982 Census.* Papers of the East-West Population Institute, No. 93. Honolulu: East-West Center.

Gu Xingyuan, Shu Baogang, Li Jieping, and Chi Xinju

1981 Shanghai shi jihua shengyu diaocha ji renkou yuzhe baogao (Survey report on family planning and population trends in Shanghai). In *Disanci Xuanguo Renkou Kexue Taolun Hui Lunwen Xuanji ''Renkou Yenjiu'' Dzengkan* [Population Research Supplement, Selected Works of the Third National Demographic Conference], pp. 228–32. Shanghai: Shanghai First Medical School; Statistical, Teaching and Research Office of Social Medicine and Health; Shanghai Office of Family Planning.

Hershatter, Gail

1982 The making of the working class in Tianjin, 1900–1949. Unpublished doctoral dissertation in history. Stanford: Stanford University.

Hoffman, Lois W., and Martin L. Hoffman

1973 The value of children to parents. In *Psychological Perspectives on Population,* edited by James T. Fawcett, pp. 19–76. New York: Basic Books.

Hoffman, Lois W., and Frederick Wyatt

1960 Social change and motivations for having larger families: Some theoretical considerations. *Merrill-Palmer Quarterly* 6:235–44.

Jaffe, A.J., and K. Azumi

1960 The birth rate and cottage industries in underdeveloped countries. *Economic Development and Cultural Change* 9:52–63.

Kane, Penny

1985 The single-child family policy in the cities. In *China's One-Child Family Policy,* edited by Elisabeth Croll, Delia Davin, and Penny Kane, pp. 83–113. New York: St. Martin's Press.

Khan, M. Ali, and Ismail Sirageldin

1979 Education, income and fertility in Pakistan. *Economic Development and Cultural Change* 27:519–47.

Lee, H.C., and H. Cho

1976 Fertility and women's labor force participation in Korea. In *Recent Empirical Findings on Fertility: Korea, Nigeria, Tunisia, Venezuela, Philippines.* Occasional Monograph Series, No. 7. Washington, D.C.: Smithsonian Institution.

Lesthaeghe, Ron, Hilary J. Page, and O. Adegobla

1981 Child-spacing and fertility in Lagos. In *Child-Spacing in Tropical Africa: Traditions and Change,* edited by Hilary J. Page and Ron Lesthaeghe. New York: Academic Press.

LeVine, Robert A.

1980 Influences of women's schooling on maternal behavior in the Third World. *Comparative Education Review* 24(2, Part 2):S78–S105.

Li Chengrui

1985 Economic reform brings better life. *Beijing Review* 29(July 22):15–29.

Li Hongfa

1981 Workers' living standards in Tianjin. *China Reconstructs* (July):45–46.

Lieberthal, Kenneth G.

1980 *Revolution and Tradition in Tientsin, 1949–1952.* Stanford: Stanford University Press.

Lin Sung-ho

1928 *Factory Workers in Tangku.* Peking: China Foundation.

Liu Chunmei and Li Zhu

1984 Sex structure of population in China. In *Analysis on China's National One-per-Thousand-Population Fertility Sampling Survey,* pp. 153–58. Beijing: China Population Information Center.

Liu Juyu

1983 Beijing shi Xicheng qu funu butong shiqi shengyu zhuangkuang huigu xing diaocha [Retrospective survey of fertility during different periods in Xicheng district, Peking]. *Renkou Yu Jingji* [Population and Economy] 1:18–23.

Lyle, Katherine

1980 Report from China: Planned birth in Tianjin. *China Quarterly* 83:551–67.

Mao Tse-tung

1954 Report of an investigation into the peasant movement in Hunan. In *Mao-Tse Tung: Selected Works,* pp. 21–59. New York: International Publishers.

Mason, Karen O.

1974 *Women's Labor Force Participation and Fertility.* Research Triangle Park, NC: Research Triangle Institute.

McClelland, Gary H.

1983 Family-size desires as measures of demand. In *Determinants of Fertility in Developing Countries,* Vol. I, edited by Rodolfo A. Bulatao and Ronald D. Lee, pp. 288–343. New York: Academic Press.

Michael, Robert T.

1973 Education and the derived demand for children. *Journal of Political Economy* 81(2, Part II):S128–S164.

Mueller, Eva

1972 Economic motivations for family limitation. *Demography* 26(3):383–403.

Nag, Moni

1983 The impact of sociocultural factors on breastfeeding and sexual behavior. In *Determinants of Fertility in Developing Countries,* Vol I, edited by Rodolfo A. Bulatao and Ronald D. Lee, pp. 163–98. New York: Academic Press.

Notestein, Frank

1953 Economic problems of population change. In *Proceedings of the Eighth International Conference of Agri-Economists.* Oxford: Oxford University Press.

Pao Chiao-ming and He Tz'u-ch'iang

1960 *Tientsin.* U.S. Government Translation. Originally published in Moscow.

Pasternak, Burton, and Wang Ching

1985 Breastfeeding decline in urban China: An exploratory study. *Human Ecology* 13:433–66.

People's Daily [*Renmin Ribao*]

7 March 1983.

Pratt, L., and P. Whelpton

1956 Extra-familial participation of wives in relation to interest in and liking for children, fertility planning and actual and desired family size. *Milbank Memorial Fund Quarterly* 34:44–78.

Ridley, Jeanne C.

1959 Number of children expected in relation to non-familial activities of the wife. *Milbank Memorial Fund Quarterly* 37:277–96

Schultz, Theodore W.

1973 The value of children: An economic perspective. *Journal of Political Economy* 81(2, Part II):S2–S13.

Shryock, Henry S., Jacob S. Siegel, et al.

1975 *The Methods and Materials of Demography.* Washington, D.C.: U.S. Bureau of the Census.

Speare, Alden, Jr., Mary C. Speare, and Hui-Sheng Lin

1973 Urbanization, non-familial work, education and fertility in Taiwan. *Population Studies* 27:323–34.

State Council Census Office

1983 *Disan Ci Quanquo Renkou Pucha Shougong Huizong Ziliao Huibian* [Collection of Manually Tabulated Data from the Third National Census, Vols. 2, 5, 6]. Beijing.

State Statistical Bureau

1983 *Ten Percent Sampling Tabulation on the 1982 Population Census of the People's Republic of China.* Beijing: China Statistical Publishing House.

Stycos, J. Mayone

1965 Female employment and fertility in Lima, Peru. *Milbank Memorial Fund Quarterly* 43:42–54.

Stycos, J. Mayone, and Robert H. Weller

1967 Female working roles and fertility. *Demography* 4:210–17.

Tianjin Municipal Statistics Bureau

1948 *Tianjin Shi Juyao Tongji Zeliao Shouce* [Handbook of Essential Tientsin Statistical Data].

Tianjin Municipality Executive Office

1939 *Tianjin Tebye Shi Xingjeng Zueiyao* [Essential Administrative Data for Tientsin Special City].

Tien, H. Yuan

1985 Provincial fertility trends and patterns. In *China's One-Child Family Policy,* edited by Elisabeth Croll, Delia Davin, and Penny Kane, pp. 114–34. New York: St. Martin's Press.

United Nations, Department of International Economic and Social Affairs

1983 *Relationships Between Fertility and Education: A Comparative Analysis of World Fertility Survey Data for Twenty-Two Developing Countries.* New York.

Weller, Robert H.

1968 The employment of wives, dominance and fertility. *Journal of Marriage and the Family* 30(3):437–42.

Westoff, Charles F., Robert G. Potter, and Philip C. Sagori

1963 *The Third Child.* Princeton: Princeton University Press.

Whyte, Martin K., and William L. Parish

1984 *Urban Life in Contemporary China.* Chicago: University of Chicago Press.

Willis, Robert J.

1973 A new approach to the economic theory of fertility behavior. *Journal of Political Economy,* Supplement:S14–S69.

Wolf, Arthur, and Chieh-shan Huang

1980 *Marriage and Adoption in China, 1845–1945.* Stanford: Stanford University Press.

Ye Yanru

1983 Beijing shi Haidian qu shengyu shi diaocha zhong kandao de jige wenti [Some problems arising from the study of fertility history of women in Haidian district, Peking]. *Renkou Yu Jingji* [Population and Economy] 1:43–53.

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ABSTRACT Using data from the 1960, 1970, and 1980 censuses of Thailand, this paper explores the changing patterns of internal migration. Throughout the period, the census measures indicate a high degree of stability; no census found more than 15 percent of the population living outside the province of birth and fewer than 7 percent were identified in any period as interprovincial five-year migrants. Lifetime migration, because it is a cumulative measure, shows a slight rise in each period, and in the most recent decade it displays a rise in inter- as opposed to intraregional movement. The findings also document that five-year interprovincial migration increased between 1955–60 and 1965–70 but declined during 1975–80. Especially noteworthy between 1970 and 1980 were the decline in interprovincial migration within regions and the rise in interregional movement. Concurrently, rural-to-rural migration declined sharply and movement between urban places became more prevalent. Thus, by 1975–80 the overall pattern of internal population redistribution in Thailand had changed considerably from that of 1955–60. Bangkok, the North, and the South had all gained at the expense of the Central and Northeast regions. More recently, however, only Bangkok and the Central region gained whereas the other three lost population. The greatest loss was that of the Northeast, where net loss to Bangkok and the Central region alone accounted for about three-fourths of the gains made by these two areas. These changing distributions are related at least in part to regional inequalities. Despite development efforts, the Northeast continues to be the nation's poorest region, while Bangkok and the contiguous provinces in the Central region profit from high levels of development and the capital's primacy. Changing migration patterns may also reflect greater reliance on temporary movement (which is not documented by censuses) in lieu of more long-term migration, especially as transportation networks have improved as part of the development process.

The developing world continues to experience rapid population growth; sharp increases in the size of urban populations, in the level of urbanization, and in the number of cities, especially big cities; and continuing rural growth (United Nations 1985:181–206). This situation presents a complex set of developments to challenge research and policy formulation efforts. They point to a pressing need for attention to population movement as a key component in population dynamics. Indeed, as fertility is brought increasingly under control, migration seems likely to account more and more for differential growth rates between rural and urban places and between regions, and for changes in the population composition of given areas.

Migration's current importance as a component of population change in both urban and rural places is attested to by the magnitude of the populations involved. Between 1950 and 1975, an estimated 330 million persons, equal to almost one-fourth of the rural population in developing countries at mid-century and greater than the total urban population at that time, shifted residence from rural to urban places (World Bank 1984:97). Yet these estimates encompass only a portion of the total volume of population movement, since they exclude temporary migration and moves within rural areas and between urban places. The importance of redistribution as a factor in demographic change and in the development process is indisputable, even though its direct contribution to urban growth today is less than it was in earlier decades; natural increase, including a large number of births attributable to migrant parents, now accounts for about 60 percent of all urban growth in less developed countries (LDCs).

Compounding the complexities of the role of permanent migration in urban growth and development is the simultaneous inflow of temporary migrants into urban places. Although this form of population movement has until recently received only scant attention, a growing body of evidence (Chapman and Prothero 1983) strongly suggests that such movement, which is largely circular—consisting, that is, of migrants who return to rural areas on a regular basis—plays a key role in the adjustment strategies of individuals and households to changing conditions at origin and destination.

The nearly universal concern in developing countries with problems of population distribution was documented by the 1981 United Nations (1982:193) survey of 126 governments in less developed countries. Only six (all small states) considered the distribution of their populations to be appropriate. Virtually all governments in Asia, the Middle East, and Africa considered their population distribution to be only partially appropriate or inappropriate. Three-quarters were pursuing policies to slow or reverse internal migration (World Bank 1984:97). The Mexico City Declaration on Population and Development acknowledged this situation (International Conference on Population, 1984). It included a call for attention in the second decade after the International Population Conference not only to high rates of internal migration, urbanization, and concentrations of populations in the large cities of less developed nations, but also to the new forms of mobility that characterize less developed countries and may have positive or negative consequences for development.

The view that migration is inherently unfortunate is particularly prevalent in less developed nations, where officials and elites tend to focus on migration's presumed or real negative impacts. They therefore advocate policies to slow or redirect movement. In contrast, a growing number of economists and other experts view migration as a universal concomitant of socioeconomic development, producing many desirable (and, in the long run, indispensable) economic and social consequences (United Nations 1984). According to this view, most nations would be best advised to design policies and programs to ease the adjustment problems associated with migration and to increase the benefits of migration. Only in some nations would policies designed to slow or redirect migration be warranted.

Clearly, migration and population distribution are topics of intense policy concern in much of the world. Yet progress in understanding the dynamics of mobility has been hampered by poor conceptualization and by misleading perspectives on the issues, as well as by data deficiencies (Goldstein and Goldstein 1981; Findley 1982). Some of these obstacles are being reduced as more attention is given to the refinement of concepts, coverage of the varied forms of movement, and collection and analysis of better data sets. Thailand is one of many less developed countries in which population redistribution has assumed increased importance, for both demographic change and development. This situation, coupled with the availability of a growing body of migration data, prompts the current assessment of Thailand's experience over the last several decades.

Compared with other less developed countries, Thailand experienced particularly rapid social and economic change between 1960 and 1980. Its per capita gross national product (GNP) grew faster than all but that of eleven other LDCs, averaging 4.6 percent over the course of the two decades (ESCAP, Population Division 1984:1). Rapid change is also indexed by the growing percentages of boys and girls enrolled in school, the expansion of cultivated lands concurrent with the emergence of a small industrial sector (mainly around Bangkok), and a substantial shift away from self-employment in agriculture to salaried occupations outside the primary sector. A vigorous family planning program has helped Thailand witness a considerable decline in its population growth rate. From a high of 3.2 percent in 1960, the annual growth rate declined to 2.6 percent by 1980 (ESCAP 1982:5). Even with this reduction, the population grew from 26.2 to 44.3 million, with resultant sharp increases in population density and considerable pressure on resources in various parts of the country.

Although Thailand remains largely agricultural, the vast majority of the population has participated in and benefited from the development process. For example, the percentage living below the poverty line has halved since 1962/63 (when it was 52 percent), though 25 percent were still identified in 1975/76 as living below the poverty line (ESCAP 1982:70–71). The degree and nature of participation, however, have differed substantially among the country's regions as well as between the rural and the urban populations. The growing opportunities outside agriculture, in both urban and rural locations, provide new stimuli for migration and new opportunities to improve living standards without geographic movement. Migration may be a particularly attractive mechanism for persons in less developed areas of the nation to realize their aspirations for a higher quality of life and to enable them to participate more fully in the growth process characterizing the country as a whole.

Given the changes that Thailand has experienced and the generally held assumption that migration will increase as economic development progresses (Caldwell 1967), the availability for Thailand of a fairly comparable set of migration statistics from three censuses—1960, 1970, and 1980—provides a unique opportunity to assess the changing rates and patterns of migration and, in turn, their relation to regional and rural-urban differences in development. This paper uses the lifetime and particularly the five-year migration data from the three censuses, covering the twenty-five years from 1955 to 1980, to evaluate changes in levels and patterns of regional migration streams and, within the limits of available data, of rural-urban streams. Reasons for recent migration documented in the 1980 census are also assessed. The changing patterns of migration are then related to regional development. Before turning to the data, we briefly give our attention to a description of Thailand's four regions and its capital, Bangkok, and to a discussion of the censuses as data sources.

THE REGIONS OF THAILAND

For statistical purposes, Thailand is usually subdivided according to its natural topography into four regions. The valleys of the Chao Phraya and several smaller rivers, the Khorat plateau of northeastern Thailand, and several coastal provinces form the North, Northeast, and Central regions.[1] The narrow peninsula extending to the Malaysian border constitutes the nation's fourth region—the South (see Map). Bangkok, because of its unique characteristics and important position in the nation's administrative and economic structure, is generally treated apart from the four regions. (Selected demographic and economic indicators for the regions are shown in Table 1.)

The largest region is the Northeast. It encompasses 170,000 square kilometers and, in 1980, about one-third of the country's population. Its topography is characterized by a geological plateau formed of red sandstone. A shortage of water makes cultivation heavily dependent on the monsoon rains. Population settlement tends to be fairly dense in the river valleys, and under the pressure of population growth it has spread into the drier areas of the region. In addition to rice, large quantities of corn, kenaf, and tapioca are grown. Since the 1960s the government has made concerted development efforts to raise the region's low living standard. Improved irrigation and widespread road construction have been major aspects of the program to help the farming population and to integrate the region more fully into Thai economic development. Because of its physical and economic

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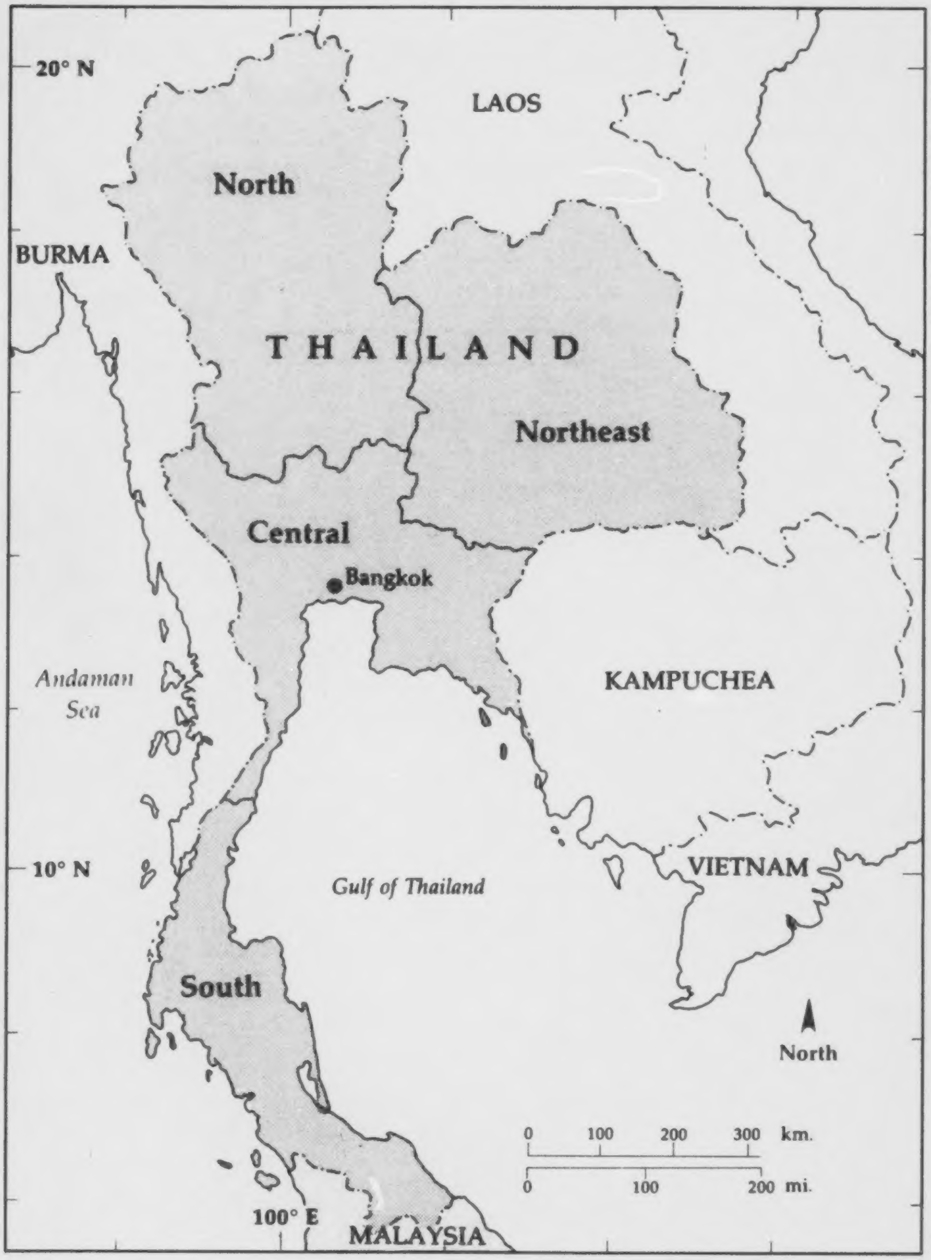
[1] Material in this section is derived largely from Tirasawat (1977) and ESCAP (1982).


20° N
LAOS
North
BURMA
THAILAND
Northeast
Central
Bangkok
Andaman Sea
KAMPUCHEA
10° N
Gulf of Thailand
VIETNAM
South
North
0 100 200 300 km.
0 100 200 mi.
100° E
MALAYSIA

Map. The regions of Thailand

Table 1. Selected demographic and economic indicators, by region: 1972–80

	Bangkok	Central	Northeast	North	South	Whole Kingdom
Population, 1980[a]	4,640,972	9,615,966	15,548,382	9,017,911	5,541,488	44,364,719
Percentage urban, 1980[a]	100.0	9.9	4.0	7.5	12.6	17.0
Density per km², 1980[a]	2,965.5	94.0	92.1	53.2	78.4	86.5
Growth rate, 1970–80[b]	4.3	2.4	2.5	1.8	2.7	2.5
Crude birth rate, 1974–75[c]	32.6	34.1	45.0	26.6	41.4	37.0
Crude death rate, 1974–75[c]	4.3	6.8	10.0	10.3	8.9	8.9
Percentage change in gross reproduction rate, 1964–65/1974–75[d]	u	-20.7	0.0	-43.8	+6.9	-19.3
Percentage of current contraceptive users, 1975[d]	50	45	30	44	18	u
Average annual household income, 1975–76 (in baht)[c]						
Total urban	41,400	42,360	36,610	38,960	40,330	40,730
Total rural	—	25,540	16,530	16,480	18,870	18,810
Rural agricultural	—	25,490	14,270	15,620	14,390	17,100
Rural nonagricultural	—	25,560	23,450	18,390	25,430	22,850
Mean size of holdings, 1974 (in rai)[c]	—	38.5	31.7	27.9	24.7	31.0
Percentage of farm operators who were owners, 1973–74[c]	—	57	89	69	83	77
Percentage of population below poverty line, 1975–76[c]	9	12	36	27	25	25
Urban	9	10	13	13	13	13
Rural	—	12	38	28	26	28

Relative gross regional product per capita (1975 national = 100)[c]	270	142	43	74	98	100
Per capita expenditures in Third National Plan, 1972-76 (in baht)[d]	3,815	1,761	1,519	1,762	1,982	u

u—data unavailable.

a. Thailand, National Statistical Office (1983b).

b. ESCAP (1982).

c. Lim et al. (1980); 1 rai = 0.16 hectare.

d. Cochrane (1979).

disadvantages, the region has experienced high rates of out-migration to other parts of Thailand.

The North covers as large an area as the Northeast, but in 1980 it contained only about 20 percent of Thailand's population. The region is mountainous and endowed with dense forests and fertile valleys. In contrast to the Northeast, water is generally ample, so that the production of rice, tobacco, timber, cattle, and a variety of vegetables and fruits permits the population to maintain a better living standard than in the Northeast. The uplands of the North are thinly populated, in part because of poor transportation networks. It is here that a considerable number of the non-Thai people live.

The Central region covers just over 100,000 square kilometers and accounted in 1980 for 22 percent of Thailand's population. This region, which receives the waters of four great rivers and encompasses the central plain, is often described as the "rice bowl of Southeast Asia." In the well-watered coastal plains of the southeastern part of the region, tapioca, rubber, pepper, and tropical fruits are extensively cultivated. Transportation by boat, rail, and road across the region is good, with much of the network radiating toward Bangkok, near the mouth of the Chao Phraya River.

The South, with an area of only about 70,000 square kilometers, constitutes the smallest geographic region of Thailand, and its 5.6 million people (1980) account for the smallest percentage of the country's population. Owing to the semiannual monsoon in the South, rainfall and water supplies are generally plentiful, permitting farmers to enjoy a high living standard. In addition to its rich agricultural products, including tobacco, fruits, vegetables, and rubber, the South relies upon tin extraction and fish for income. Subsistence rice cultivation in the region is a secondary activity. Like the Northeast, but for somewhat different reasons, the South is isolated from the other parts of Thailand. The South's geographic configuration and topography account for this isolation, sometimes making communication with other parts of the country difficult. One-fourth of its population is Muslim, in contrast to the heavy predominance of Buddhism elsewhere in the nation. The Thai Muslims, concentrated in the southernmost provinces of the region, are culturally and economically oriented more toward Muslim Malaysia than to Buddhist Thailand. The government has made concerted efforts to improve the quality of life in the region and to integrate it more fully with the rest of the kingdom.

Bangkok, with its 4.7 million people, is the political, cultural, commercial, and social center of Thailand. Historically, Bangkok has always maintained a dominant position; railway lines, highways, and air routes converge on it from all parts of Thailand, and its links to the rest of Southeast Asia and the world at large have proliferated in the post World War II era. Even though a number of the smaller cities in the North and Northeast were much nearer to each other than to Bangkok, until the late 1960s communication between them generally had to be channeled through Bangkok itself. This situation has changed considerably, but the capital's dominance as an integrating center for the nation's political, economic, social, and intellectual life has persisted; in fact, as judged by demographic statistics alone, its primacy has increased. Whereas in 1947 Bangkok's population was twenty-one times greater than that of Chiang Mai, the next largest city in Thailand, in 1960 it was twenty-seven times greater, in 1970 thirty-two times greater, and in 1980 forty-six times greater. A substantial part of the increase between 1970 and 1980 was due to the extension of the municipal boundaries in 1972 to encompass the total areas of Phra Nakhon and Thonburi Provinces (in which the Bangkok municipality is situated). It must be added, however, that even as the nation's population is increasingly concentrated in the southern part of the Central Plain, where Bangkok is located, the twentieth century has also witnessed the develoment of regional towns and a substantial urban hierarchy, although one in which Bangkok clearly dominates (ESCAP 1982:11).

SOURCES OF DATA

In 1967 an ECAFE[2] (predecessor of ESCAP) Working Group concluded that the magnitude of problems associated with migration and urbanization in the ECAFE region necessitated improved data on these phenomena and policy-oriented analysis (ECAFE 1967). Fortunately, the situation in a number of countries in the region, including Thailand in particular, has improved considerably since then. In fact, Thailand had already paid attention to migration in the 1954 Demographic and Economic Survey of Thailand (Thailand, National Economic Development Board 1957) and in the 1960 census. Continued attention was given to migration in the 1970 and 1980 censuses, as well as in the National Longitudinal Study of Social, Economic, and Demographic Change in Thailand (e.g., Prachuabmoh et al. 1971) and in a series of other studies (e.g., ASEAN Population Programme 1981; Chamratrithirong et al. 1979). Thailand thus has the distinction of being one of only a few developing countries in which the assessment of migration and its relation to urbanization and rural development has become a major focus.

Because attention to migration arose there early, data sets encompassing several decades provide an opportunity to assess changing migration patterns and to relate them to urbanization and rural development. The following analysis relies almost exclusively on the published data from the 1960, 1970, and 1980 censuses. This approach is used in the interest of obtaining maximum comparability over time and coverage of the entire kingdom, rather than of particular communities or sample areas covered by special surveys. Although the censuses were not always consistent in the definitions they used, in the amount of detail obtained, and in the ways in which the data were tabulated, they do provide a reasonably comparable set of data covering 1960–80. Their value is enhanced by the large numbers of migrants included. By contrast, sample surveys often are not able to give adequate representation to all parts of a country and therefore may not allow comparative analysis of regional or urban–rural differentials. They also generally include few migrants, given the overall sample size and the small proportion of the total sample that migrants usually constitute. Finally, comparability among surveys may be difficult because of the varying definitions of migration used. Before proceeding to the analysis of the data, some attention should be given to the definitions employed and the kinds of statistics that result.

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[2] United Nations Economic Commission for Asia and the Far East, renamed Economic and Social Commission for Asia and the Pacific in 1974.

In all three censuses each person enumerated was counted as an inhabitant of the place where he or she usually lives or sleeps. In 1960 two questions were asked to measure migration: the province of birth (or country, if born outside Thailand) and the province of residence five years prior to 25 April 1960. Thus the 1960 census provides the basis for identifying two sets of migrants: those persons living in a province other than the one where they were born (i.e., lifetime migrants) and those persons living in a province other than the one where they had resided five years earlier (i.e., five-year or recent migrants). Because the 1960 census did not ask a question on the urban or rural character of the migrants' place of birth or place of residence five years before the census, the 1960 census data do not allow measurement of flows between rural and urban places.

The 1970 census also obtained information concerning how long each person (age 5 and over) had been living in the current place of residence (village or municipal area). For those reporting movement within the previous five years, information on the last previous place of residence was obtained: both the province (or country) and whether it was urban or rural. Information on the rural or urban character of origin for recent migrants in the 1970 census allowed several analyses that were not possible from 1960 census data. It must be noted, however, that the 1970 wording of the five-year question differed from that in 1960; it did not refer to a particular date five years earlier (fixed point question) but rather called for information on length of residence in the current place, regardless of when the move had been made. The census then ascertained the rural or urban character of origin only for persons reporting a move within the five years preceding the census. These data on migration in the five years preceding the census are used in the analysis that follows. Even though later references to data based on this question may refer to such migration as five-year migration, this distinction between the 1970 and the 1960 data must be kept in mind.

The 1980 census used the same basic questions as in 1970, and therefore the 1970 and 1980 census data are more comparable to each other than either is to the 1960 census. Furthermore, in a new 1980 census question, those who had changed place of residence between 1975 and 1980 were asked the reasons for their move. The resulting information may add important insights to our understanding of population redistribution in Thailand.

Both the lifetime and the five-year migration data for Thailand have all the defects inherent in these types of migration statistics (Goldstein and Sly 1975:143–201). The lifetime migration statistics, based on place of birth, do not indicate, for example, when the move had been made for those who were living in a province different from the province of birth, nor do they indicate how many moves were made in the period between birth and the census. Moreover, all those who had returned to their place of origin were not identified as having made any move at all. The fixed-point five-year question has some of the same limitations, although these may be less serious because, for most individuals, the period encompassed is much shorter than for the lifetime question. Nonetheless, it records only a single move and overlooks intermediary ones. The phrasing of the question (*how long* the individual has been living in the current place of residence) overlooks all moves preceding the last one; in the case of persons who moved more than once during the most recent five-year period, it therefore fails to identify the place of residence exactly five years before the census.

For both questions, accuracy of recall may be a serious problem, as may changes in boundaries and in the classification of places as rural or urban. In addition, underenumeration in the census has been estimated at about 3 percent in 1960 (Das Gupta and Sen Gupta 1967), between 1.7 and 5.3 percent in 1970 (Arnold and Phananiramai 1975), and 4.5 percent in 1980 (Pejaranonda et al. 1983). Persons missed by the census may consist disproportionally of migrants, and their omission therefore may deflate the overall migration rates derived from the tabulated data and distort comparisons, especially if the underenumeration is disproportionally concentrated in specific locations.

The use of provinces as the basic unit for delineating migration also presents problems, since provinces are basically political units; they vary in size, shape, and how the population is concentrated within them. To the extent that a migrant is defined as anyone who crosses a provincial boundary, the extent and direction of migration may be affected by the nature of the boundary system itself. This drawback does not introduce serious problems of comparability over the twenty-year period encompassed by our evaluation, since only minor changes in boundaries have occurred during the interval. In 1972 two provinces—Phra Nakhon (the province that originally encompassed Bangkok) and Thonburi Provinces—were merged into the Bangkok Metropolitan Area. Before the merger the census had counted movement between the two provinces as interprovincial migration. To make the 1960 and 1970 census data comparable to those from 1980, persons moving between the two former provinces have been defined as residential movers and not counted as migrants. Between the 1970 and 1980 censuses, two new provinces were created through the subdivision of Ubon Ratchathani Province in the Northeast region of Thailand and Chiang Rai Province in the North. Adjustment has been made for these changes in boundaries in the lifetime and five-year migration data, so that the data for 1980 are comparable to those for earlier censuses. For such purposes, persons moving between the two provinces created either from Ubon Ratchathani or from Chiang Rai are not counted as interprovincial migrants.

LIFETIME MIGRATION

In 1960, when the Thai census first compiled migration data for systematic analysis, 11 percent of the Thai population reported themselves as living in a province different from that in which they had been born. Comparison of this level of lifetime mobility with that characterizing other more or less developed countries is difficult because of differences both in development level and in the areal units used. For example, in India, where the average size of a state is 212,380 square kilometers, 3.3 percent of the 1961 population were enumerated in a state different from their state of birth (Bose 1965:598). In the United States, where the average size of the forty-eight continental states is 163,170 square kilometers, the 1960 census enumerated 26 percent of the native-born population outside their state of birth (U.S. Bureau of the Census 1964:Table 68). Differences in size of units, in development levels, in traditions affecting attitude toward movement, and in population composition can all affect comparability in the migration levels of different countries.

Given the relatively small average size of a Thai province (about 15,022 square kilometers), the Thai level of lifetime migration is not particularly high; yet such a conclusion must be qualified in view of the high Thai birth rate in the 1950s. High fertility, resulting in disproportionally more persons in the very young ages, inflates the proportion of persons living in their birthplace simply because children have not yet had as much opportunity to move. In 1960, for example, almost one-third of the Thai population was under 10 years old, compared with just over one-fifth in the United

States. When adjustment is made for age by restricting measurement of lifetime migration to persons 13 years old and older, the percentage of Thais living outside their province of birth rises to 16 percent of the population, a level that is still low in comparison to the United States.

In commenting on the small proportion of the 1960 Thai population involved in lifetime migration, Caldwell (1967:49) noted that an increased rate of internal migration may have to await the countrywide development of a modern transportation system and higher industrialization levels throughout the kingdom. Until then, most provincial towns could be expected to grow only moderately, while Bangkok's primacy and attractiveness for migrants continued. Both the interregional comparisons for 1960 and the changes in levels of lifetime migration between 1960 and 1980 support such an expectation.

In 1960 the percentage of lifetime interprovincial migrants in the population varied considerably by region (Table 2). Reflecting its dominance in the Thai urban, political, economic, social, and educational structure, Bangkok[3] contained a far higher percentage of lifetime migrants in its population than did the other four regions of Thailand: 22.8 percent in Bangkok compared with 7.7 to 10.9 percent in the other regions. Surprisingly, among the four regions, the level of migration was highest in the Northeast, the poorest region in the nation. This finding suggests that the high lifetime interprovincial migration levels reflect redistribution of population within the region rather than movement to the region. Unfortunately, the available data on 1960 lifetime migrants do not allow a subdivision of the total interprovincial migrant group into those moving within and between regions. The somewhat lower levels of lifetime migration characterizing the North and South suggest their comparative isolation from other parts of Thailand in the years preceding 1960 and their lack of attractiveness compared with the Central region and especially Bangkok.

By 1970 lifetime migration levels rose for Thailand as a whole, as well as for three of the four regions. In the 1970 census 13.1 percent of the population reported themselves living in a province other than their province of birth. The particularly substantial increase (almost 50 percent) in Bangkok's population between 1960 and 1970 testifies to the importance of migration in the capital's growth; 27 percent of the capital's 1970 population was born elsewhere in Thailand. The even more dynamic changes characterizing development in Thailand as a whole during that interval, as well as population pressures growing out of high rates of population growth in most parts of the country, were reflected in sharp rises in the regional lifetime migration levels. In the Central region, the percentage of lifetime migrants rose from 10.3 to 14.4 percent, in the North from 8.5 to 12.6 per-

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[3] "Bangkok" refers to the combined provinces of Phra Nakhon and Thonburi.

Table 2. Lifetime interprovincial migration, by region: 1960, 1970, and 1980 (Numbers in thousands)

Region of residence and year	Total population		Living in province of birth		Not living in province of birth						Foreign-born	
					In same region		In another region		Total interprovincial migrants			
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
1960												
Whole kingdom	26,258	100.0	23,009	87.3	u	u	u	u	2,761	10.8	488	1.9
Bangkok	2,136	100.0	1,426	66.7	u	u	u	u	486	22.8	224	10.5
Central	6,135	100.0	5,395	88.0	u	u	u	u	634	10.3	106	1.7
North	5,723	100.0	5,054	90.9	u	u	u	u	625	8.5	44	0.6
Northeast	8,992	100.0	8,169	88.3	u	u	u	u	765	10.9	57	0.8
South	3,272	100.0	2,965	90.6	u	u	u	u	251	7.7	57	1.7
1970												
Whole kingdom	34,397	100.0	29,557	85.9	2,521	7.3	1,970	5.8	4,491	13.1	350	1.0
Bangkok	3,077	100.0	2,075	67.4	—	—	838	27.2	838	27.2	165	5.4
Central	7,534	100.0	6,375	84.6	789	10.5	297	3.9	1,086	14.4	74	1.0
North	7,489	100.0	6,508	86.9	474	6.3	470	6.3	944	12.6	37	0.5
Northeast	12,025	100.0	10,790	89.7	975	8.1	224	1.9	1,199	10.0	36	0.3
South	4,272	100.0	3,809	89.2	283	6.6	141	3.3	424	9.9	38	0.9

1980												
Whole kingdom	44,364	100.0	37,854	85.3	2,756	6.2	3,482	7.9	6,238	14.1	272	0.6
Bangkok	4,641	100.0	3,243	69.9	—	—	1,268	27.3	1,268	27.3	130	2.8
Central	9,616	100.0	7,841	81.5	796	8.3	929	9.7	1,726	18.0	49	0.5
North	9,018	100.0	7,781	86.3	558	6.2	640	7.1	1,198	13.3	39	0.4
Northeast	15,548	100.0	14,033	90.3	1,030	6.6	454	2.9	1,484	9.5	31	0.2
South	5,541	100.0	4,956	89.4	371	6.7	191	3.4	562	10.1	24	0.5

Source: Thailand, National Statistical Office (1962, 1973, 1983b).

Note: Persons whose place of birth is unknown are excluded from the tabulations.

cent, and in the South from 7.7 to 9.9 percent. The Northeast was characterized by a slight decline in lifetime migration levels, although the absolute number of its migrants increased. As indicated earlier, these patterns fail to take into consideration the effects of natural increase or possibly differential mortality between migrants and nonmigrants, so that the percentage of lifetime migrants in a region's population is not a clear measure of change.

The 1970 data allow some refinement in the analysis of lifetime patterns, by dividing migrants between those moving within regions and those moving between regions. In 1970 intraregional lifetime migration exceeded interregional migration by about 25 percent. Since short-distance movement is generally more frequent than long-distance movement, this finding is not surprising. What are perhaps more interesting are the differentials in the relative distribution of intra- and interregional migrants in the nation's regions. For three of the four regions, cumulative within-region movement was considerably greater than between-region movement. The differential was sharpest for the Northeast, reflecting its low attraction for migrants from other parts of Thailand because of its much poorer economy. By contrast, the North had a virtual balance in the division between inter- and intraregional movers, possibly because Thailand's second largest city, Chiang Mai, is located within the region. The substantial growth in teak production during the decade (Thailand, National Statistical Office 1972:229), especially in the North, may also have added to that region's attractiveness to migrants.

Despite the rising lifetime migration level, perhaps the most interesting observation emerging from the 1970 and 1960 data is the high percentage of Thai who were living in their province of birth. With the exception of Bangkok, this amounted to at least 85 percent of native-born Thai and reached almost 90 percent in the Northeast and in the South. Moreover, for the smaller percentage who had made a move across provincial lines during their lifetime, most had stayed within their region of birth.

By 1980 the percentage of lifetime migrants had risen again slightly, reflecting in part the cumulative character of this measure of migration; 14 percent of all Thai were living outside the province in which they had been born. That the percentage for Bangkok remained virtually the same as in 1970 partly reflects the mortality of the earlier in-migrants and the disproportionate number of nonmigrants who were born in the capital to both earlier migrants and to the growing number of native-born residents. It also reflects a greater degree of stability in the capital's growth rate and the increasing attraction of suburban developments in the surrounding provinces to migrants who might have moved to Bangkok. The greater than average rise in interprovincial migrants in the Central region reflects this change. In the Northeast and the South, the lifetime migration level also remained virtually unchanged between 1970 and 1980, while the level in the North rose. Most interesting in 1980 is the substantial shift in the distribution of lifetime migrants between those who moved within a region and those who moved between regions. In contrast to 1970, for the country as a whole a higher percentage of the lifetime migrants in 1980 had moved between regions; this change also characterized both the Central region and the North.

By definition, any move to the Bangkok Metropolitan Area is an interregional migration, and such movement accounted for 36 percent of all interregional migration in Thailand. Yet, relatively speaking, this was a decline compared with 1970, when 42 percent of all interregional lifetime moves were to Bangkok. The Central region had the largest increase by far between 1970 and 1980, in both absolute and relative terms; its interregional migrants increased from 297,000 in 1970 to over 900,000 in 1980. A substantial part of this change undoubtedly is attributable to spillover from Bangkok; but the data also make clear that the Central region has become increasingly attractive to migrants from other regions as well, partly because of its proximity to the capital. These data point, therefore, both to rising levels of migration as measured by lifetime movement and to an increasing amount of longer-distance movement as measured by interregional migration.

In 1980, as in 1960, Bangkok remained the area with the largest percentage of lifetime migrants in its population, but the growing importance of migration nationally is evidenced in the increasing percentages of lifetime migrants in the Central, North, and South regions. Nonetheless, with the exception of Bangkok, at least 80 percent of the population in each region (substantially more in the South and Northeast) were born in their 1980 province of residence. While some of these persons may have moved and returned to their province of birth and others may have made moves within the province, the low levels of interprovincial movement indicated by these statistics point to a high degree of population stability in Thailand as measured by these lifetime data. Whatever adjustments are made to changing social and economic conditions apparently take place for most individuals within the confines of the provinces in which they were born. Such adjustments may take the form of interrural or rural-to-urban movement, temporary movement in the form of commuting or circulation, or *in situ* adjustments through occupational changes or changes in fertility.

A major limitation of the lifetime data is the inability to use them directly to measure migration during any specific period, because they do not indicate when a move occurs. It is possible, however, to use these data to obtain crude indications of the volume of intercensal migration in Thailand. Such estimates can be derived by comparing the numbers of net lifetime migrants in successive censuses, taking account of mortality to migrants in the intervening ten years (Shryock and Siegel and Associates 1976:384–90; United Nations 1970:5–14). Assuming, on the basis of the life table data for Thailand, that about 10 percent of the 1960 lifetime migrants did not survive to 1970, such estimates indicate that between 1960 and 1970 a net redistribution of 313,000 persons occurred among the regions of Thailand, equivalent to about 1.2 percent of Thailand's 1960 population of 26.3 million. Indicative of the overriding attraction of Bangkok in this period, 293,000 of the total redistribution was to the capital city. In the interchange between the other regions, the North gained a net of 20,000 persons. The estimates suggest that the Central region lost 161,000 persons and the Northeast, 131,000. The South also was a net loser, but of only 21,000 persons.

Similarly, a net regional interchange of 432,000 persons is estimated to have occurred between 1970 and 1980. Although larger in absolute terms than the 313,000 net redistribution occurring in 1960–70, the 1970–80 interregional movement is equivalent to just under 1.3 percent of the 1970 Thai population of 34.4 million, about the same rate as in the earlier decade. This estimate suggests that the most recent decade did not witness a rising pace of interregional migration, as measured by the lifetime data, despite Thailand's continuing development.

The 1970–80 intercensal period did, however, witness a noticeable shift in the regional distribution of gains and losses. The Central region replaced Bangkok as the largest gainer of migrants, with a net gain of 228,500 compared with 203,600 for the capital. Such a large gain for the Central region is particularly noteworthy, given the net intercensal loss in the earlier decade of 161,300 migrants, mostly to Bangkok. Other 1970–80 data suggest that the Central region was gaining growing numbers of migrants in its exchange with other regions and had achieved a virtual balance in its exchange with the capital itself. During the same period the North, Northeast, and South were all losing migrants in their exchanges with other regions of the kingdom, and their losses were substantially above the 1960–70 levels. In the North the net interchange in fact was reversed from a gain to a loss.

Although the method employed to ascertain these intercensal migration estimates is crude because the data are based on census lifetime migration, the results suggest that a plateau in the overall level of net interregional movement was achieved in Thailand in 1970–80. They point as well to considerable change in the pattern of gains and losses among the individual regions. Assessment of the more direct measures of migration available from the 1960, 1970, and 1980 censuses on movement among provinces and regions in the five years immediately preceding each census should allow more precise determination of the changes that occurred over those several decades.

FIVE-YEAR MIGRATION PATTERNS

The data on five-year interprovincial movement from the 1960 census suggest a high degree of population stability (Table 3). Of the 22 million persons 5 years old and older in 1960, only 3.6 percent had been living in a different province in 1955. Moreover, the majority of those who had migrated did so within the same region. Overall high levels of stability were thereby reinforced to some extent because those who moved tended to remain within the same region.

These patterns did not characterize all regions to the same degree. As expected because of its prominent place in the Thai urban hierarchy and the social and economic structure, Bangkok had proportionately more recent migrants in its population in 1960 than did any other region of Thailand. According to the census, over 130,000 persons (7.3 percent of the capital's population) had moved there since 1955. Given the rate at which the capital had been growing, this number seems low. Some who lived in the capital may have considered themselves temporary residents only and may have expected to stay in Bangkok only a short time (Chamratrithirong et al. 1979). Under census procedures, such persons would have reported their usual residence as their place of origin and been counted in those places, even though they may in fact have been living in the capital for a year or more. Their omission would lead to considerable underenumeration of recent movement to the city.

In contrast to Bangkok, the percentage of the population identified as recent migrants in other regions in 1960 ranged from a low of 2.7 percent for the Northeast to a high of 4.1 percent for the Central region. The latter's greater attraction reflects not only its better economic status compared with other regions of Thailand but also its proximity to Bangkok, making it attractive to migrants both from Bangkok and from other regions of the country who would like to live at least near the capital. Differences among the three other regions were minimal.

For all regions in this period, a minority of the migrants moved between regions. This percentage varied from just over 40 percent for the Central region and the North to only 12.6 percent for the Northeast. These differences are correlated with the socioeconomic levels characterizing these regions and, to a degree, with their distance from Bangkok. The Northeast was clearly unattractive to migrants from other regions; the very poor economic conditions in the region contributed to its being an area of high outmigration as well. The South's lack of attractiveness is probably due to its distance from the other regions and the predominantly Muslim character of some of its provinces.

By 1970 the overall level of five-year migration in Thailand had risen considerably, reflecting the dynamism of the 1960s. Although the total popu-

Table 3. Interprovincial recent migration, by region: 1955–60, 1965–70, 1975–80 (numbers in thousands)

Region of residence	Total population, ages 5 and over	Migrants within region		Migrants between regions		Total interprovincial migrants[a]		% of migrants making interregional moves
		Number	% of total population	Number	% of total population	Number	% of total population	
1955–60								
Whole kingdom	22,019	454	2.1	335	1.5	789	3.6	42.5
Bangkok	1,806	b	b	131	7.3	131	7.3	100.0
Central	5,176	124	2.4	86	1.7	210	4.1	41.0
North	4,755	91	1.9	66	1.4	157	3.3	42.0
Northeast	7,508	180	2.4	26	0.3	206	2.7	12.6
South	2,773	59	2.1	26	0.9	85	3.0	30.6
1965–70								
Whole kingdom	28,738	905	3.2	770	2.7	1,675	5.9	46.0
Bangkok	2,695	b	b	299	11.1	299	11.1	100.0
Central	6,364	248	3.9	208	3.3	456	7.2	45.6
North	6,345	196	3.1	120	1.9	316	5.0	38.0
Northeast	9,773	330	3.4	100	1.0	430	4.4	23.3
South	3,562	131	3.7	43	1.2	174	4.9	24.7

1975–80								
Whole kingdom	39,380	755	1.9	858	2.2	1,613	4.1	53.2
Bangkok	4,250	b	b	341	8.0	341	8.0	100.0
Central	8,626	218	2.5	285	3.3	503	5.8	56.7
North[c]	8,112	166	2.0	104	1.3	270	3.3	38.5
Northeast[c]	13,512	241	1.8	74	0.6	315	2.4	23.5
South	4,879	130	2.7	54	1.1	184	3.8	29.3

a. Excludes migrants whose province of origin is unknown.

b. Movement between the provinces of Phra Nakhon and Thonburi was not considered interprovincial migration; by 1975–80 the two provinces had been merged to form the Bangkok Metropolitan Area.

c. Adjusted for movement between the province split into two provinces between 1970 and 1980. Such movement was not considered interprovincial migration.

lation of ages 5 and over increased by about one-third during the decade, the number of migrants in the five years preceding the decennial census more than doubled, to 1.7 million, and their percentage in the total population increased from 3.6 to 5.9 percent. Evidently, migration had become a more common phenomenon as the development process accelerated and as pressures resulting from rapid population growth rates mounted. The rising overall migration levels were accompanied by a slight increase in interregional movement over that in the 1955–60 period. Between 1965 and 1970, 46 percent of the moves were between regions, compared with 43 percent for 1955–60.

The level of in-migration was substantially higher in Bangkok than in the other regions during 1965–70, but the gap with the Central region had narrowed since 1955–60. In 1970 almost 300,000 Bangkok residents reported that they had moved to the capital since 1965. They constituted 11 percent of Bangkok's population, well above the 7 percent of recent in-migrants in the capital's 1960 population. The Central region's five-year migrants increased to 7 percent (up from only 4 percent in 1955–60), almost half of whom came from outside the region. This increase may reflect in part the growing metropolitanization of Bangkok, so that the capital's functional population overflowed into the adjoining provinces of the Central region.

The percentage of migrants in the other three regions varied minimally, between 4.4 and 5.0 percent, with the Northeast continuing to have the lowest proportion. Yet, in each of these regions, the percentages were at least 50 percent higher than they had been in 1960. The data also indicate that in the Central region and the Northeast, more migrants came from outside the region in 1965–70 than in 1955–60, the proportion rising from 41.0 to 45.6 percent in the Central region and from 12.6 to 23.3 in the Northeast. The increase for the Northeast is particularly noteworthy; it suggests that economic change in this least developed part of Thailand was stimulating movement to the region in the years immediately preceding 1970. Some of these changes were undoubtedly related to the Northeast's role as a base for U.S. military operations in Vietnam. The fourfold increase in the absolute number of recent migrants, from 26,000 to over 100,000, lends weight to such a conclusion. As in 1960, greater homogeneity existed among the regions in the levels of intraregional movement than in the levels of interregional migration.

The pattern changed during 1975–80. Even though the population of ages 5 and over increased from 28.7 in 1970 to 39.4 million persons in 1980, the number of persons who changed their province of residence between 1975 and 1980 (1,613,000 persons) declined slightly compared with the movement of 1,675,000 persons during 1965–70. Hence in 1980, 4.1 percent of the populaton were classified as recent migrants, a level considerably below the 5.9 percent for 1965–70 but still above the 3.6 percent of the 1955–60 level. The overall decrease in recent migration for 1975–80 reflects, particularly, a decline of movement within regions from 905,000 to 755,000 persons. During the same interval, the volume of interregional movement rose from 770,000 to 858,000. For the first time, therefore, the evidence available from the decennial censuses indicates there was more interregional than intraregional migration. In 1980 only 46.8 percent of all interprovincial recent migrants had moved within the regions, whereas 53.2 percent had moved between regions. This pattern continued a new trend already indicated by the 1970 data.

Together, these data from the censuses suggest that the Thai population of ages 5 and over on the whole made fewer provincial moves between 1975–80 than during the five-year period preceding the previous census, a decline due to fewer reported intraregional moves. In part, this change may reflect the fact that the most dramatic economic and social changes in Thailand had occurred during the 1960s, even though the pace of development continued into the 1970s. The increase in longer-distance movement during 1975–80 also suggests that the level of national development by then favored long-distance rather than short-distance permanent migration as a form of adjustment to job opportunities and resources. Such movement may have been facilitated in part by improvements in transportation routes between the regions and by better communications. The increasing educational levels of the Thai population concurrently may have made them more receptive to information about opportunities in distant locations. The relative reduction in short-distance permanent migration may reflect a greater reliance on temporary movement, both circular migration and commuting, as a response to rural pressures, to easier accessibility to urban places, and to growing opportunities in provincial municipal areas. Fuller assessment of the reasons for the changing patterns must therefore include attention to the rural–urban movement that took place within the provinces themselves. Attention will be given to that movement in a later section of this paper.

The lower level of recent interprovincial migration characterizing Thailand as a whole in 1980 (4.1 percent compared with 5.9 percent in 1970) occurred in the capital as well as the regions; for some regions the decline was substantial. For the Northeast, in fact, the reported migration level was even lower than in 1955–60, although it disproportionally reflects declines in the levels of movement between regions. Yet, even at these lower levels, in 1980 Bangkok continued to have the highest percentage of recent migrants (8 percent). That the rise of about 40,000 in the absolute number of inmigrants did not result in a proportionally higher level indicates the substantial increases between censuses in the population both of Thailand as a whole and of Bangkok, and suggests that the pace of movement to the capital had slowed in the ten-year interval. As in previous decades, the Central region contained more migrants than the other three regions. Moreover, 1975–80 saw a continuation of the pattern noted in 1965–70: a narrowing between Bangkok and the Central region in the percentage of migrants in their populations, suggesting a continuing population overflow from Bangkok to the adjoining provinces and movement directly to those provinces by individuals who would otherwise have gone to the capital. The Northeast remained by far the least attractive region of the country, whereas only small differences continued to distinguish the North and the South.

For all regions of Thailand, intraregional migration in 1975–80 was below that of the preceding decade, and for all but the South the differences were substantial. For the Northeast, the percentage of such migration was even substantially below that reported for 1955–60. Overall, the 1975–80 data also point to a decline in the absolute amount of movement between provinces within the same region. In 1975–80 the levels of movement between regions were lower than in 1965–70 for Bangkok and all regions except the Central one, but the declines were not so dramatic; only in the North and Northeast did they involve decreases in the absolute number of interregional migrants. As a net result of these different degrees of change in intra- and interregional migration, for three of the four regions interregional migration constituted a higher percentage of all interprovincial migration in 1980 than in 1970. The change was particularly pronounced for the Central region, which for the first time in the three decades showed a majority of its migrants coming from other regions. By contrast, fewer than 30 percent of the migrants in the South and Northeast came from other regions, maintaining the pattern of high intraregional movement that characterized these regions in the preceding two decades.

THE RELATION OF FIVE-YEAR TO LIFETIME MIGRATION

As noted earlier, the measures of lifetime and recent migration are based on responses to different census questions, each of which has its own strengths and limitations. An individual classified as a recent migrant is not necessarily classified as a lifetime migrant since the recent move may have been a return to the province of birth; the individual would then be living in the province of birth and therefore classified as a lifetime nonmigrant. Only through cross-tabulations of the lifetime and five-year migration data by origin and destination of each move can the extent of return migration be ascertained.

Such tabulations again suggest a high degree of stability among the Thai population, judged by interprovincial movement (Table 4). Of the 1970

Table 4. Recent and lifetime migration compared: 1970 and 1980

Type of migrant	1970 Total population	1970 Recent migrants	1980 Total population	1980 Recent migrants
Not recent migrants				
Living in province of birth	84.8	na	85.4	na
Living in other province	8.1	na	1.0	na
Recent migrants				
Moved from province of birth	3.8	72.0	2.8	60.9
Moved to province of birth	0.5	9.6	1.0	21.2
Moved between other provinces	1.0	18.4	0.8	17.9
Total %	100.0	100.0	100.0	100.0

Source: Thailand, National Statistical Office (1973, 1983b).

Note: Tabulations include only those migrants for whom provinces of origin and destination are known.

na—not applicable.

population 5 years of age and over, 84.8 percent were living in their province of birth and had not moved between provinces in the five years between 1965 and 1970. An additional 8.1 percent were living in a province different from that in which they had been born, but had not moved since 1965. By 1980 the corresponding percentages were 85.4 and 1.0. The percentage of persons living in their province of birth at least five years thus remained quite stable. The percentage of long-time residents in a province other than that of birth declined sharply, however, between 1970 and 1980, suggesting either further movement to yet another province or a return to the province of birth during 1975–80. Insights into these possible patterns are provided by tabulating the data for recent migrants only.

The censuses also ascertained, for those who had moved in the respective preceding five years, whether the most recent move was from or to the province of birth or between two other provinces. Although it is not possible to know with certainty that the movement from the province of birth was the first migration rather than one of a series of circulatory moves, for the majority of the population it was most likely the former. Such primary moves were the most prevalent for recent migrants in both 1965-70 and 1975-80, but considerably more so in the earlier period; 72.0 percent of recent migrants came from their province of birth during 1965-70, compared with only 60.9 percent a decade later. Particularly noteworthy, therefore, is the substantial increase in repeat migration. During 1965-70, 28.0 percent of recent migrants had made at least one previous move. A decade later 39.1 percent had done so.

Repeat migration involving onward movement between provinces, neither of which was the province of birth, was very similar (about 18 percent) in the two periods. Most striking is the sharp increase in the percentage of return migrants—those migrating to their province of birth. Return migration characterized only 9.6 percent of 1965–70 recent migrants but 21.2 percent of the 1975–80 group, involving some 366,000 persons. Thus, whereas about one-third of those who made a repeat move between 1965 and 1970 had returned to their province of birth, just over half of all repeat movement between 1975 and 1980 was a return to the province of birth. These data strongly suggest, therefore, a growing volume and higher rates of return migration and possibly circular migration.

The data do not indicate the reasons for the dramatic change. Quite likely, a considerable part of the return and repeat movement reflects the inability of urban areas, especially Bangkok, to provide the employment opportunities required by the growth of the labor force through maturation of the young population and through in-migration. Faced with unemployment or underemployment, migrants to these urban centers may opt to return to their places of origin or try yet another location. Additionally, by the mid-1970s government development efforts in some rural areas may have been successful enough to attract migrants who were only marginally viable in previous destinations back to their place of origin; others may have been drawn to rural areas opened for development in the early part of the decade. Improved transportation networks may be making circulation a more feasible alternative to long-term migration, so that rural residents can opt to leave their home villages periodically on a temporary basis whenever economic opportunities arise elsewhere. Such a strategy is particularly attractive to risk-averse individuals and families.

That many migrants (at least among those to Bangkok) are not certain about the duration of their stay at the destination is documented by the 1983 Survey of Migration in Bangkok Metropolis, Nonthaburi, Pathum Thani, and Samut Prakan (Thailand, National Statistical Office 1983a). Among persons who had arrived in the capital and the three surrounding provinces between November 1980 and October 1982, only 3.5 percent stated that they expected to stay less than one year, but almost two-thirds did not know how long they would remain (Thailand, National Statistical Office 1983a: Table 15). The tenuous nature of these migrants' stay in the capital city area is further documented by the statistics on registration: Only 23.5 percent of the migrants registered their moves (Thailand, National Statistical Office 1983a: Table 26). Although these data are not comparable to the census data because the survey refers to a different time span and covers all migrants to the area, including seasonal migrants, the survey provides important insights into the patterns suggested by the census analysis. The

Table 5. Five-year migration as a percentage of lifetime migration, by region: 1960, 1970, 1980

Region	1960	1970	1980
Whole kingdom	28.6	37.3	25.7
Bangkok	27.0	35.7	26.9
Central	33.2	42.0	29.1
North	25.1	33.4	21.5
Northeast	26.9	35.9	21.4
South	33.7	40.9	32.7

findings also have important implications for policy and deserve much fuller exploration.

Relating the overall volume of five-year migration to the volume of lifetime migration for each region of Thailand for each census year can yield further insights into the relative prominence of each (Table 5). The kingdom as a whole experienced a rise of about one-third in the ratio between recent and lifetime migration from 1960 to 1970, followed by an even greater decline by 1980. In fact, the 1980 ratio was below that of 1960. Basically the same pattern characterized Bangkok and the four regions of Thailand. These data point to lower migration levels in the most recent decade, suggesting that the achievements in development coupled with some reduction in population pressures resulting from wider acceptance and use of contraception have changed the extent to which individuals turn to migration as a means of improving their socioeconomic well-being.

FIVE-YEAR INTERREGIONAL MIGRATION STREAMS

Because the data on five-year migration are tabulated by regions of origin and destination, attention in the following discussion will focus on the recent (five-year) interregional migration streams in each of the census periods. It must be stressed, however, that for all regions, except the Central one in 1980, interprovincial migration within regions constitutes by far the largest single migration category, reflecting the tendency of the migration volume to vary inversely with distance.

As with migration patterns elsewhere, every migration stream has its counterstream. To some extent counterstreams reflect return migration. As earlier analysis has suggested, however, return migration constitutes only a small, though growing, percentage of interprovincial movement in Thailand. Counterstreams therefore largely reflect individual migrants' preferences and perceptions, based on their own characteristics and needs.

As a result, what attracts one person to a given location may be the very factor that stimulates another person to leave the place.

Gross migration levels

According to the 1960, 1970, and 1980 censuses, Bangkok gained more recent in-migrants from the Central region than from any other region of Thailand, a development that reflects the close social and economic integration between the capital and its adjoining provinces as well as their geographic proximity (Table 6). The economically depressed Northeast was the second largest source of migrants for the capital, but until 1975-80 their number was substantially below that from the Central region. By 1980 the difference in the number of recent migrants to Bangkok from the Northeast and from the Central region had narrowed, reflecting the combined effects of a reduction between 1965-70 and 1975-80 in the volume of movement from the Central region and a virtual doubling in the amount of movement from the Northeast. The North and the South also sent increasingly more migrants to Bangkok in each intercensal period, but the increases were proportionally much smaller for 1975-80 than they were for the Northeast. These changes point to the increasing pressure for movement out of the Northeast as well as to the continuing attractiveness of Bangkok to migrants.

As early as 1955-60 the Central region had become the goal for a considerable number of migrants from the capital. The 40,000 persons reported as moving to the Central region from Bangkok far exceeded the next largest stream, 25,860 persons from the Northeast. The predominance of Bangkok as the origin of the largest migration stream to the Central region continued through the 1960s and 1970s. Each succeeding period saw a narrowing difference, however, in the volume of migrants originating from Bangkok and from the Northeast. Whereas the latter stream was only about 62 percent as great as the movement from Bangkok in 1955-60, it reached 83 percent of the Bangkok-to-Central region movement in 1975-80. Again, the rising volume of out-migration from the Northeast and the increasing attractiveness of provinces adjoining Bangkok in the Central region are documented.

In 1955-60, with only two exceptions, the streams of movement to the North, the Northeast, and the South from each of the other regions were small compared with movements to Bangkok and the Central region; they exceeded 20,000 persons only for movement to the North from the Central region and the Northeast. The basic patterns in the direction of interchange remained similar for 1965-70, although the volume of movement between regions increased for most streams, and for some the changes were quite dramatic. For example, with the exception of movement from the South, the flow of people from each region to the North roughly doubled between

Table 6. Interprovincial recent migration streams, by region; 1955–60, 1965–70, 1975–80

Current residence	Total interprovincial migrants	Region of previous residence				
		Bangkok	Central	North	Northeast	South
1955–60						
Bangkok	131,370	—	81,214	13,947	26,745	9,464
Central	210,211	40,006	123,762	15,560	25,860	5,023
North	156,721	8,900	30,270	90,702	26,002	847
Northeast	206,149	8,890	10,758	4,896	180,353	1,252
South	84,555	6,529	10,850	1,482	6,998	58,696
1965–70						
Bangkok	298,791	—	166,181	36,555	66,813	29,242
Central	456,081	82,823	248,103	47,231	62,936	14,988
North	315,734	14,646	58,035	195,703	43,920	3,430
Northeast	430,668	23,592	45,646	26,130	330,486	4,814
South	173,730	8,867	18,486	3,775	11,519	131,083
1975–80						
Bangkok	340,792	—	144,397	43,178	119,661	33,556
Central	502,869	115,355	218,084	53,727	95,890	19,813
North	269,827	20,945	38,746	165,972[a]	40,558	3,606
Northeast	314,910	20,059	32,142	17,438	241,034[a]	4,237
South	183,642	14,033	20,046	7,225	12,582	129,756

Sources: 1955–60 data from Thailand, National Statistical Office (1976: table 19) and Goldstein (1977); 1965–70 and 1975–80 data from Thailand, National Statistical Office (1973, 1983b).

[a] Adjusted for movement between provinces split into two provinces during the period 1970–80. Such movement was not considered interprovincial migration.

1955-60 and 1965-70. Movement to the Northeast tripled for the stream from Bangkok and increased fourfold or more from the Central region, the North, and the South. In this particular decade, the Northeast had clearly gained in popularity as a migrant destination even while losing migrants to all regions in larger numbers than it had done a decade before.

These substantial increases in the number of migrants to the North, the Northeast, and the South during 1965-70 did not persist during 1975-80. For many of the streams the volume of movement reported by the census for 1975-80 was lower than that reported for the 1960s. The Northeast replaced the Central region as the largest supplier of migrants to the North; the Central region continued to maintain the distinction it had held since 1955-60 as the major region of origin of migrants to the Northeast and the South. Interestingly, in 1975-80 Bangkok itself took on increased importance as the origin of migrants to the North and the South, and in fact was second only to the Central region in the number of persons it sent to the Northeast and the South. Although some of the migrants from the capital may have been return migrants, many were government personnel or private-sector employees whose jobs were transferred; others probably moved in response to employment opportunities available in the growing urban centers of the various regions and in the development efforts launched in rural areas.

Net migration

As a result of the stream and counterstream movements, the gross exchange between regions far exceeded net recent migration (Table 7), suggesting that migration in Thailand is characterized by low levels of effectiveness as measured by the ratio of net migrants to total interregional migrants. This suggestion is confirmed by the data. The 1955-60 interregional exchange involved some 335,000 persons but resulted in a net exchange of only 109,000, equivalent to an effectiveness index of 32.5 (100 would equal perfect effectiveness). By 1965-70 the 769,000 gross migration between regions yielded a net migration among the regions of 175,000, reflecting a reduction in the effectiveness index to only 22.8. The more widespread movement that characterized this decade evidently was less efficient if judged only by numbers. The lower level of efficiency persisted during 1975-80, when 857,000 interregional migrants of known origin and destination led to a net redistribution of only 220,000 migrants, representing a level of effectiveness indexed at 25.7.

Only Bangkok and the Northeast showed similar patterns of net migration in all three censuses. Bangkok consistently gained in its exchange and did so with each of the other regions; the Northeast showed a consistent loss to each of the regions in each period. In contrast, the Central region

Table 7. Regional net gains and losses from recent migration: 1955-60, 1965-70, 1975-80

Region of current residence	Region of previous residence					Total
	Bangkok	Central	North	Northeast	South	
1955-60						
Bangkok	—	+41,208	+5,047	+17,855	+2,935	+67,045
Central	-41,208	—	-14,710	+15,102	-5,827	-46,643
North	-5,047	+14,710	—	+21,106	-635	+30,134
Northeast	-17,855	-15,102	-21,106	—	-5,746	-59,809
South	-2,935	+5,827	+635	+5,746	—	+9,273
1965-70						
Bangkok	—	+83,358	+21,909	+43,221	+20,375	+168,863
Central	-83,358	—	-10,804	+17,290	-3,498	-80,370
North	-21,909	+10,804	—	+17,790	-345	+6,340
Northeast	-43,221	-17,290	-17,790	—	-6,705	-85,006
South	-20,375	+3,498	+345	+6,705	—	-9,827
1975-80						
Bangkok	—	+29,042	+22,233	+99,602	+19,523	+170,400
Central	-29,042	—	+14,981	+63,748	-233	+49,454
North	-22,233	-14,981	—	+23,120	-3,619	-17,713
Northeast	-99,602	-63,748	-23,120	—	-8,345	-194,815
South	-19,523	+233	+3,619	+8,345	—	-7,326

Source: Based on data in Table 6.

was transformed from a region of net loss in 1955-60 and 1965-70 to one of net gain in 1975-80. The North showed a reverse pattern. It gained in both 1955-60 and 1965-70 because its positive exchanges with the Central region and the Northeast were sufficiently large to compensate for the losses to Bangkok and the South; by 1975-80 it was also losing to the Central region and its loss to the South had become accentuated. The South, too, went from a region of gain to one of loss but did so earlier than the North. In 1955-60 it gained in its exchanges with every region except the capital. It continued to do so in 1965-70, but by this time the small gains with the three regions were not sufficient to compensate for the very large increase in the net loss to the capital, from just under 3,000 to over 20,000 persons. This pattern persisted into 1975-80, when a similarly large loss to Bangkok more than wiped out the relatively small gains from the other three regions.

Thus by 1975-80 the overall pattern of internal population redistribution in Thailand had changed considerably from what it had been in 1955-60. Earlier, Bangkok, the North, and the South had all been gainers at the expense of the Central region and the Northeast. Most recently, only Bangkok and the Central region gained and the other three lost population. By far the greatest loss was in the Northeast, where the net loss to Bangkok and the Central region alone accounted for about three-fourths of the gains made by these two areas.

THE LARGEST INTERPROVINCIAL STREAMS

Data for 1965-70 and 1975-80 on the largest interprovincial streams (5,000 migrants and more) further document Thailand's changing migration patterns (Table 8). Although these streams represent only 1 percent of all possible interprovincial streams, they encompass about one-fourth of all interprovincial migrants. In 1965-70 fifty streams contained a minimum of 5,000 people each and together accounted for 419,090 interprovincial migrants (Arnold and Boonpratuang 1976). Of these, 58.6 percent represented intraregional moves involving 245,967 individuals. In that period movement to Bangkok accounted for 28.4 percent of the migrants in the largest streams, and movement out of Bangkok involved only 10.1 percent. Only a small minority of migrants in these streams moved between Thailand's four regions.

By 1975-80 the number of interprovincial streams of at least 5,000 migrants had changed only slightly, declining to forty-eight; the total number of persons involved had also fallen slightly, to 416,771 (Pejaranonda, Goldstein, and Goldstein 1984). Major changes had occurred in the directions of movement, however. Data on the largest streams indicate a substantial decline in intraregional movement. Only 22.7 percent of the migrants in these streams moved between provinces within regions, compared with

Table 8. Regional flows of the largest interprovincial migration streams: 1965-70 and 1975-80

Regional flows	1965-70 Number of migrants	1965-70 % distribution	1975-80 Number of migrants	1975-80 % distribution
From Bangkok to				
Central	36,213	8.7	77,675	18.6
Northeast	5,905	1.4	5,172	1.2
North	—	—	—	—
South	—	—	—	—
To Bangkok from				
Central	90,644	21.6	109,353	26.2
Northeast	28,354	6.8	97,101	23.3
North	—	—	13,597	3.3
South	—	—	19,363	4.7
Intraregional				
Central	30,739	7.3	5,791	1.4
Northeast	125,804	30.0	54,949	13.2
North	66,768	15.9	10,711	2.6
South	22,656	5.4	23,059	5.5
Other	12,007	2.9	—	—
Total	419,090	100.0	416,771	100.0

Sources: 1965-70 data from Arnold and Boonpratuang (1976); 1975-80 data from Pejaranonda, Goldstein, and Goldstein (1984).

Note: Blank cells indicate that the interprovincial streams in these cases were too small to be included in the largest streams.

58.6 percent a decade earlier. The number of individuals involved correspondingly fell from 245,697 to only 94,510, a decline of over 60 percent. Except for the movement involving Bangkok, none of the largest streams in 1975-80 was between regions.

Paralleling the decline in intraregional movement was a sharp increase in migration to Bangkok. Such movement in 1975-80 encompassed 57.5 percent of the migrants in the forty-eight largest streams, compared with only 28.4 percent a decade earlier, and the absolute number of migrants increased from 118,998 in 1965-70 to 239,414 a decade later. The number of migrants moving out of Bangkok to provinces in the Central region more than doubled and accounted for 18.6 percent of all the migrants in the largest streams, compared with only 9 percent ten years earlier. Moreover, 82 percent of these out-migrants from Bangkok moved to the three provinces—

Nonthaburi, Pathum Thani, and Samut Prakan—considered to be the suburban area of the capital. The data on the largest streams therefore corroborate the suburbanization of areas around Bangkok that was suggested by the overall five-year migration data. That these largest streams do not include streams from other provinces to Bangkok's three suburban provinces suggests that such direct suburbanward movement is quite diffuse. Despite this diffusion, the importance of the cumulative impact is evident in data (not presented here) that indicate that interprovincial migration to the three suburbs increased 26 percent over the decade.

Like the earlier data on five-year migration, these data on the largest interprovincial streams document sharp changes in migration patterns. The shift away from intraregional moves toward more migration to Bangkok suggests that potential migrants perceived or became aware of greater opportunities in the capital than in their own region. As suggested above, however, it is also possible that greater reliance on shorter-distance circulation has made intraregional movement less necessary than in the past.

INTERREGIONAL OUT-MIGRATION PATTERNS

The interregional data can also be used to determine the percentage of a region's censal population consisting of out-migrants. (The comparison is necessarily crude in the absence of more accurate data on the population of the region at the beginning of the five-year interval to which the out-migration refers.) When this is done, the patterns identified and the changes over time corroborate the findings based on in-migration and net migration presented earlier (Table 9).

In absolute numbers the Central region had the largest out-migration stream in 1955–60 and 1965–70, reflecting the heavy movement to Bangkok from its surrounding provinces. The numbers continued to be high in 1975–80, but the Central region was surpassed by the Northeast as the region of heaviest out-migration. Bangkok, despite its great attraction as a migrant destination, also had a large number of out-migrants in each period, surpassing both the North and the South. If out-migration is expressed as a percentage of the region's total population, Bangkok had the highest out-migration level, a function in part of its overall smaller population size. The Central region had the next highest level, and the South had the lowest level in each period.

Over time the patterns of change in the level of out-migration by region largely paralleled that of in-migration. Between 1955–60 and 1965–70 each region and Bangkok experienced a rise in the percentage of out-migrants. The relative change was particularly sharp for the North and South, where percentages more than doubled and where the absolute number of out-

Table 9. Interregional out-migration, by region: 1955–60, 1965–70, 1975–80 (Numbers in thousands)

	1955–60		1965–70		1975–80	
Region	Number	% of total population	Number	% of total population	Number	% of total population
Bangkok	64	3.6	130	4.8	171	4.0
Central	133	2.6	288	4.5	235	2.7
North	36	0.8	114	1.8	122	1.5
Northeast	86	1.1	185	1.9	269	2.0
South	17	0.6	52	1.5	61	1.2
Whole kingdom	335	1.5	770	2.7	858	2.2

Source: Based on data in Table 6.

migrants tripled, compared with a doubling in the other regions and Bangkok. During the following decade, however, the percentage of out-migrants declined in each region except the Northeast, where it remained constant. Only the Northeast and Bangkok experienced a substantial increase in the absolute number of out-migrants. The Central region had fewer out-migrants in 1975–80 than in 1965–70, and its level of out-migration actually declined to about its 1955–60 level.

URBAN AND RURAL MOVEMENTS

Urban growth

In discussing migration in relation to urban growth, municipal areas will be used to denote urban. Such a procedure may be misleading, however, because the number of areas so designated has changed minimally since they were established in the 1930s and 1940s—from 116 then to 119 now. Since then, the municipal areas themselves have grown considerably in size: In 1947, 95 percent of these urban places were populated by fewer than 20,000 people; by 1979 only half were (Thailand, National Statistical Office 1984: Table 29). In addition, other locations in Thailand, not classified as municipal areas, have taken on the characteristics of urban places, especially those localities designated as "sanitary districts."[4] (For a fuller discussion of these definitional issues, see Robinson and Wongbuddha 1980 and Goldstein and Goldstein 1978.) Since most available census publications do not tabulate sanitary districts separately, the term urban here will be restricted to municipal areas. To insure comparability over time, we treat Bangkok (Phra Nakhon and Thonburi Provinces) separately from the Central region, where it is often included in 1960 and 1970 published census tabulations.

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[4] Locations are designated as sanitary districts on the basis of such diverse criteria as density, annual income, and being a district headquarters; many are on the fringes of municipal areas and are suburban in character.

As defined by the proportion of total population living in municipal areas, the urbanization level in Thailand increased from 9.9 percent in 1947 to 12.5 in 1960, 13.2 in 1970, and 17.6 in 1980. By 1980, despite these increases, the level of urbanization was still well below that characterizing Southeast Asia as a whole (23 percent) and below that of developing countries generally (31 percent), according to the United Nations (1982). Yet equally noteworthy is the consistent rise in the urbanization level since 1947 and the particularly accelerated urbanization tempo in the decade 1970–80. The urban growth rate of 5.3 in the 1970s far exceeded the 2.1 rate of rural areas, and it represented a considerable increase over the 3.4 urban growth rate in the 1960s (ESCAP 1982:25).

A substantial part of the increase in the 1970s was a function of areal annexation, however. Urban growth attributable to natural increase and migration is estimated to have increased from 1.7 million in the 1960s to about 2 million in the 1970s, while that attributable to areal annexation increased from 120,000 to 823,000. The contribution of areal annexation to urban population growth was therefore raised from only 6.5 percent in the 1960s to almost 30 percent in the 1970s. By contrast, the contribution of natural increase declined from just half to 41 percent, and that of net migration from 44 to about 30 percent. The important role of annexation in urban growth during the 1970s reflected in large measure the designation of the Bangkok Metropolitan Area as encompassing the entire two provinces in which the twin cities of Thonburi and Bangkok are located. About four-fifths of the capital's population growth in that period was therefore attributable to annexation, which, in turn, accounted for about one-fourth of total urban growth in Thailand as a whole during the decade. Without this change in boundaries, the distribution of the components of urban growth in the 1970s would have closely paralleled that of the 1960s (ESCAP 1982:30), and the growth rates and urbanization tempo would have been more similar to those of the 1960s.

In virtually all discussions of the role of big cities in urban and economic development, Bangkok emerges as a leading example of a primate city. In most rankings of primate cities it appears first whether measured by the size of its population in relation to the next largest city in the country or judged by the proportion that its population constitutes of the total population of the four leading cities. The evidence clearly indicates more, rather than less, concentration of population resulting from interregional migration in and around Bangkok during the twenty-five years from 1955 to 1980. The increasing concentration is evident even if Bangkok alone is considered. In 1960 Bangkok contained 51.9 percent of Thailand's urban population; by 1970 the percentage had risen to 54.8, and by 1980 to 61.1 percent.

By contrast, the urbanization level has been low in all regions at each census date. The highest levels are found in the South, the lowest in the Northeast. The South in 1960 was (and still is) the only region with as much as 10 percent of its population living in urban places; the percentage had increased to 12.6 by 1980 (Table 1). This 1980 urbanization level was almost three times greater than that of the Northeast, where the percentage urban increased only from 3.5 to 4.0 percent during the twenty-year interval. Nor did the North change its level very much (from 6.4 to 7.5 percent). The faster urban development in the South reflects the increased role of the region's urban centers as transportation and commercial hubs serving the rich agricultural areas as well as its tin and fishing industries. The development of a new international airport at Hat Yai and improvements in the highway system on this main route to Malaysia and Singapore are contributing factors. The minimal change in the Central region is partly related to the proximity of Bangkok and the capital's dominance in the region's (as well as the nation's) urban structure. In the North and Northeast, urbanization is occurring more slowly, partly because the rural population also continues to increase.

Urbanization has permeated all of Thailand's regions, nonetheless, even though at a low level. Moreover, as indexed by the nation's ten largest urban places, some equalization in urban distribution occurred between 1960 and 1980. In 1960 three of the ten largest cities were in the Central region, four in the North, two in the South, and one in the Northeast. By 1980, however, only Bangkok Metropolis represented the Central region in the distribution; each of the other three regions had three places among the top ten. Thus, although the levels of urbanization had not changed substantially in the twenty-year period, the greater spread of Thailand's leading cities among the regions does point to some weakening in the unbalanced distribution of urbanization.

Rural-urban migration

Both the 1970 and the 1980 censuses collected information on rural-urban migration in Thailand, including movement within provinces (Table 10). In 1970, 11.6 percent of the population were classified as migrants on the basis of a change in locality, in contrast to the 5.9 percent who were so identified when a change in province of residence served as the definition of

Table 10. Urban-rural recent migration streams: 1965-70 and 1975-80

Item	1965-70 Number	1965-70 %	1975-80 Number	1975-80 %
Population, ages 5 and over				
Nonmigrants	25,405,300	88.4	36,432,552	92.6
Migrants	3,331,100	11.6	2,947,700	7.4
Total population	28,736,400	100.0	39,380,252	100.0
Migrants				
Rural-rural	2,086,700	62.6	1,532,900	52.0
Rural-to-urban	348,000	10.5	420,600	14.3
Urban-to-rural	180,400	5.4	278,300	9.4
Urban-urban	297,000	8.9	506,000	17.2
Stream unknown	419,000	12.6	209,900	7.1
Total migrants	3,331,100	100.0	2,947,700	100.0

Sources: 1965-70 data from Arnold and Boonpratuang (1976); 1975-80 data from tabulations of the 1 percent sample tape of the 1980 Census of Thailand (Pejaranonda, Goldstein, and Goldstein 1984).

Note: Data for 1955-60 are not available for rural or urban origin and destination.

migration. This difference points to a much higher degree of population movement in Thailand than the data on interprovincial migration indicate.

As in other developing countries, most of the internal migration from one locality to another reported between 1965 and 1970 involved moves from one rural place to another; just over 60 percent of the 3.3 million migrants changed residence between rural locations. The rural-to-urban migration stream, on which most attention usually focuses, was much smaller. Between 1965 and 1970 only 10.5 percent of all migrants moved from rural to urban locations; this percentage may be a slight understatement since an additional 3.6 percent of all 1970 urban-resident migrants did not indicate whether they had come from a rural or an urban place. The numbers of rural-to-urban migrants may also be underenumerated because those who migrated to the large sanitary districts and suburban locations—areas that have taken on an urban character but are still classified as rural—were counted as rural-to-rural, rather than rural-to-urban, migrants (ESCAP 1982). Even when these considerations are taken into account, the number and percentage of rural-to-urban migrants is substantially below the rural-to-rural stream, pointing to the importance of movement between rural places in the economic and familial adjustments of rural residents.

Although the rural-to-urban stream is small relative to the rural-to-rural flow, the numbers are great in relation to the urban population, and such migrants play an important role in urban growth. As already noted, during 1960-70 net migration accounted for about 44 percent of all urban growth in Thailand, and the contribution would be even greater if the children born to those migrants were attributed to migration rather than to natural increase. Thus even a small increase in the absolute number of migrants from rural to urban places can have a substantial impact on the size of the urban population and on particular urban places if that flow is narrowly channeled.

As a reflection of the growing numbers of persons in urban places and the fact that some urban residents also migrate, the 297,000 individuals reported as moving between urban places during 1965-70 (about 9 percent of all migrants) almost equaled the rural-to-urban flow. With the increasing number of residents in urban places and the growing interaction among urban places, this particular migration flow will likely become more important in Thailand, as it has in other developing countries.

Another noteworthy stream, often overlooked in migration analysis, is the urban-to-rural stream. Some 180,000 persons in Thailand moved from an urban to a rural place between 1965 and 1970, accounting for 5 percent of the total migration flow and just over half of the rural-urban migration. Since a substantial percentage of the flow was likely to have been return migration (Goldstein, Pitaktepsombati, and Goldstein 1976:131-35), it emphasizes the stream and counterstream character of population movement in Thailand. The size of this stream also suggests that the demographic impact of rural-to-urban movements may be mitigated by a return movement over a short period. Much more careful attention is warranted to such movement as a factor that affects not only the demographic but also the social and economic conditions in the rural origins and the temporary urban destinations.

As indicated above, fewer five-year interprovincial migrants were identified in 1975-80 than in 1965-70. A similar decline is found to have occurred when migration is defined by place of residence. Despite an increase between 1970 and 1980 of just over 10 million persons in the Thai population of ages 5 and over, the number of persons moving between localities in the five years preceding the 1980 census dropped to 2.95 million from 3.33 million in 1965-70. The overall migration level concomitantly fell from 11.6 percent to only 7.4 percent.

Examination of the individual migration streams indicates that all of the decline occurred in the rural-to-rural migration stream and, for those migrants who were rural residents, with rural or urban origin unknown. In contrast to the 2.1 million persons who moved between rural places in 1965-70, only 1.5 million reported such moves in 1975-80, reducing their proportion of all migrants from 63 to only 52 percent. Each of the other migration streams grew.

Several explanations may underlie these patterns of change. To the extent that less and less rural land is available for settlement, and to the degree that rural development efforts *in situ* have met with some success, less opportunity or incentive may exist for the rural population to move from one rural location to another. The decline may also be in part a function of the success of the family planning program in rural Thailand, especially in the North, where lower fertility has somewhat lessened population pressures on limited resources.

Another factor contributing to the decline in rural-rural migration may be the increased importance of international labor migration from Thailand, especially in the second half of the 1970s. By 1980 an estimated 98,000 labor migrants had gone abroad, most of them to the Middle East (Piampiti 1985:9). These migrants, primarily men from rural areas, may very well be substituting international migration for rural-to-rural movement. The remittances they send to their villages are instrumental in providing a better standard of living for the families left behind; they fund land purchases, construction of better housing, and education for children. At the same time, the modern household goods the migrants bring home with them during their annual home leave also improve village life. All of these factors may lessen the desirability of moving from the village to another rural location. How long such international labor migration will remain an alternative to internal movement will depend, of course, on factors in the economies of the Persian Gulf states, especially the price of oil on the international market.

Nevertheless, the rising size of urban places and the attractions they offer, coupled with the incentives to leave the village, account for the continuing movement from rural to urban places. Yet, this flow, which accounted for 14 percent of all moves in 1975–80 compared with 10 percent in 1965–70, increased less than expected on the basis of the overall growth of Thailand's rural population. Development in rural areas and the sizable international labor migration may help to explain this somewhat attenuated migration stream. The deteriorating employment situation in Bangkok may be another factor in the decrease of rural-to-urban migration.

Far more substantial changes occurred in both the urban-urban and the urban-rural flow. Migration between urban places was 70 percent greater in 1975–80 than in 1965–70; it accounted for 17 percent of all 1975–80 migration, compared with only 9 percent in the previous period. By 1975–80 it even exceeded the rural-to-urban flow in size. Not surprisingly, as urbanization levels rose in all regions of the nation, even while Bangkok remained the leading magnet for migrants, the interchange among urban places became accentuated. The change was in part a function of the growing numbers of government officials transferred from one urban location to another as the size and importance of such places increased. Most likely, it reflected both the growing number of urban residents who perceived better opportunities in other urban locations and the increasing movement between Bangkok and its suburbs.

At the same time, the growing levels of urbanization in Thailand provide an ever increasing reservoir of city residents who may migrate to rural places. The cumulative number of migrants from rural to urban places also creates a reservoir for potential return migrants to their rural origins. For 1980 the urban-to-rural stream had risen by about 100,000 to 9.4 percent of all five-year migrants in Thailand, compared to the 5.4 percent it constituted in 1970.

A fuller assessment of these various streams within a regional context is precluded by various limitations of the published data. On a regional basis, no cross-tabulations are available on the rural or urban character of places of origin and destination, or on the extent of repeat and return movement. Additionally, some rural-to-urban movement is masked because of the misclassification of places under the official Thai designation of urban places. If this misclassification occurs differentially by region, it could affect comparability. These shortcomings argue for a refinement of the official statistical data collection and tabulation procedures as well as for special studies directed at these problems. The absence, to date, of data on rural-urban migration for the specific regions also precludes comprehensive assessment of the relation between migration and urbanization in Thailand.

REASONS FOR MIGRATION

A major innovation in the 1980 census was the inclusion of a question to ascertain from all five-year migrants the reasons for their move. Data based on this question provide some insights into how actual or perceived development opportunities affect migration. They indicate that economic considerations constituted an important motivating factor in all migration streams, especially among male rural-to-urban migrants, most of whose moves were motivated by the search for work (Table 11). By contrast, for those male urban–urban migrants who cited economic reasons for the move, one-third moved because of job transfers, which were also an important reason for male urban-to-rural movement—more so than to find work. Economic reasons, and especially job transfers, were of lesser importance to women migrants in all streams, except those moving from rural to urban places. These data suggest that, whereas rural-to-urban migrants move to cities in search of the greater economic opportunities they perceive to exist there, migrants moving from urban places to rural locations more generally do so only if a job is guaranteed in advance at their destination, such

Table 11. Reasons for migration, by urban–rural stream and by sex: 1975–80 (Percentage distribution)

Sex and reason for migration	Migration stream Rural-rural	 Rural-to-urban	 Urban-to-rural	 Urban-urban
MALES				
Economic				
Looking for work	27.5	49.7	21.0	24.6
Job transfer	6.4	7.2	21.7	13.9
Other	2.7	3.8	2.0	3.1
Education	3.4	10.7	2.9	9.7
Family-related				
Change in marital status	18.0	2.6	7.3	1.9
To accompany person in household	30.3	14.8	30.5	29.0
Other[a]	9.3	5.0	11.9	12.5
Unknown	2.5	6.3	2.8	5.3
All reasons	100.0	100.0	100.0	100.0
FEMALES				
Economic				
Looking for work	16.5	39.4	11.4	16.3
Job transfer	1.9	1.7	6.7	3.1
Other	1.8	2.8	1.1	3.1
Education	1.7	13.5	3.4	12.4
Family-related				
Change in marital status	12.2	4.8	6.9	5.2
To accompany person in household	59.3	33.1	59.6	49.3
Other[a]	4.3	2.0	9.2	6.1
Unknown	2.3	2.8	1.6	4.4
All reasons	100.0	100.0	100.0	100.0

Source: Pejaranonda, Goldstein, and Goldstein (1984).

a. Includes joining family member, returning home, and going to another residence.

as in the case of job transfers. In many instances, of course, the latter migrants may actually be required to move by their employers.

Urban places were also centers of attraction for persons seeking education, regardless of their rural or urban origin. Partly reflecting the increasing participation of women in secondary and higher education, more women than men cited education as the reason for their moves to urban places. For these women, the smaller, regional cities may be particularly important destinations. Future analysis of reasons for moving crossclassified by urban or rural origin and destination and regional residence should help to clarify this possibility.

Moving to accompany someone in the household was an important reason for both men and women in all migration streams, although less so for rural-to-urban migrants. In the other streams about 30 percent of the men and 50 to 60 percent of the women had moved for this reason. Moving because of a change in marital status was more characteristic of rural-rural migrants than of those in other streams. This behavior may reflect the need to move in order to obtain adequate land for the livelihood of a newly established household.

THE RELATION OF MIGRATION TO DEVELOPMENT

In evaluating its population activities during the Fourth National Economic and Social Development Plan Period (1977–81), the Thai government concluded that it had not achieved its goal of promoting policies to reduce migration into the Bangkok Metropolis (Ad Hoc Sub-committee on Population 1981:7–11); nor had it been successful in encouraging migration to other provinces or interregional migration and the development of regional centers to attract rural migrants to slow the migration rate to Bangkok. Policymakers identified several reasons for this failure: Economic pressures continued to encourage migration from less developed to more developed areas. Continued high rates of movement to Bangkok had led to a multitude of social and economic problems, but efforts to cope with them had actually increased the attractiveness of the city to migrants, as well as to private investment. A failure to decentralize the administrative authority to regional and local levels had, in turn, hampered regional and rural development efforts. Regional and rural–urban disparities in income and economic opportunity have thereby continued and may actually have been fostered by these policies; they may continue to stimulate migration to already overburdened areas. In 1981, as in previous decades, the government was therefore forced to conclude that there "is at the present an unequal distribution of population, resulting from the fact that the government has never imposed any limitations on population movement" (Ad Hoc Subcommittee on Population 1981:73).

The report's review of selected indicators of economic well-being corroborates its conclusions and helps to explain the migration patterns noted in this analysis. Low income, correlated with scarcity of resources and few job opportunities, persists in the regions of Thailand to varying degrees. In 1975–76 the Northeast, with an average annual per household income of 17,952 baht,[5] stood in stark contrast to Bangkok with its average of 41,304 baht. Household income in the North was also low, averaging 18,432 baht, whereas in the South and the Central regions, and especially the latter, better economic conditions were reflected in averages of 21,456 baht and 27,000 baht, respectively.

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[5] Twenty baht in 1975–76 were roughly equivalent to US $1.00.

The differences are even more pronounced when urban and rural residence is considered. For Thailand as a whole, and for each of the regions, municipal household incomes were well above those of units living in sanitary districts; the latter, in turn, were substantially above those of the village households. Moreover, to the extent that household size varied by location and tended to vary inversely with the level of urbanization, the differentials were even sharper if measured on a per capita basis. Thus, in contrast to an income of 8,226 baht per capita for Bangkok's core population, that of the village population in the Northeast (the lowest per capita reported) averaged only 2,615 baht, 68 percent lower.

Paralleling the regional and urban-rural income differentials are differentials in the percentage of the Thai population living below the poverty level. Using a 1975-76 monthly per capita income of 200 baht in urban places and 150 baht in rural places as the standard of poverty, World Bank economists found 25 percent of Thailand's population to be below poverty levels (Lim et al. 1980:62). This percentage differed substantially between rural and urban areas and among the rural areas of the four regions. Only 9 percent of Bangkok's population and 10 to 13 percent of the urban populations in other regions were classified as poor. By contrast, the level in the rural areas of the four regions varied considerably. The Central region's rural poverty level was lowest (12 percent) and similar to the level of its urban areas. Poverty levels in the rural areas of the South and North were intermediary, at 26 and 28 percent, respectively. As with most other development indicators, poverty was highest in the Northeast, where 38 percent of the rural population lived below the poverty line. In fact, while accounting for only 39 percent of Thailand's rural population, the Northeast had 52 percent of Thailand's rural poor.

Although local conditions undoubtedly affect the poverty levels, a series of common factors have also been identified ("Strategy for rural development" 1982). These include the depressed prices received by farmers as a result of the monopolistic market at the wholesale and export levels and the large number of middlemen; neglect of backward areas as production is increased through heavier reliance on the amount of land under cultivation rather than improvement in methods of production; the relatively small investment in rural development; and continued population growth, which, although at reduced rates, still exceeds job creation and leads to excessive exploitation of resources. Despite the efforts over the course of four development plans (1961-81) to achieve higher economic growth rates, the net result seems to have been unbalanced growth, favoring manufacturing, trade, and services rather than agriculture.

Contributing to the unbalanced growth and generally reinforcing the basic population redistribution patterns of earlier periods was the tendency to direct rural development projects to areas already characterized by better growth potential. The data showing average investment of development funds in the third Five-Year Plan (1972–76) is illustrative (Cochrane 1979:62). The Northeast received an average investment of 1,519 baht per capita, the lowest investment of all regions. Bangkok's average of 3,815 baht was over twice as high and far exceeded that of the other three regions as well, which received only between 1,761 (North and Central) and 1,983 (South) baht per capita on average.

Given the regional and urban–rural differences in income, the substantial out-migration from the Northeast and the attraction of Bangkok is easily understood, as is the need of the rural population to seek better opportunities in other rural places and in urban locations. Indeed, with differentials as sharp as these, perhaps what is surprising is that migration does not occur with greater frequency and that there is substantial movement to areas characterized by poor conditions. Apparently, not only economic factors stimulate migration; some opportunities seem to attract individuals with given credentials or socioeconomic characteristics even to such poorer areas. Research on the noneconomic factors affecting both stability and migration is much needed here.

Population growth due to high rates of natural increase may also create pressure on resources and thereby stimulate out-migration. Comparison of regional rates of natural increase shows increasing divergence between 1964/65 and 1974/75 (Thailand National Statistical Office 1978). In the mid-1960s the annual rates in each region hovered about the national average of 3.13 percent, ranging only between 2.93 in the Central region (including Bangkok) and 3.23 in the South. By 1974/75, natural increase ranged from a low of 1.63 in the North to a high of 3.50 in the Northeast. The startling change in the North was due to a sharp drop in its birth rate, from 43.5 to 26.6 during the decade. In the same period the birth rate rose slightly in the Northeast from 43.5 to 45.0, and in the South from 40.7 to 41.4. The net effect of these changes was to maintain population pressure in the Northeast, both through sheer numbers and because a high percentage of its population was in younger age groups. These changes may help to explain the continuing high exodus from the Northeast throughout the 1960s and into the 1970s, and the reversal of the South from a receiving to a sending area (Cochrane 1979:9).

In evaluating the migration patterns revealed by the 1960 and 1970 census data, the World Bank observed that although the population of Thailand is not very mobile, a substantial increase in mobility occurred between 1955-60 and 1965-70 and that "migration theory suggests that it will continue to increase as economic development progresses" (Cochrane 1979:33; see also Caldwell 1967). The 1975-80 data suggest that this prediction has not come true. In contrast to the 5.9 percent level of interprovincial migration in 1965-70 (over 50 percent greater than the 1955-60 rate), that of 1975-80 was only 4.1, representing a substantial decline if the data are accepted as correct. Moreover, intraregional migration declined in each region, and interregional migration declined for all but one; only the Central region maintained its earlier level.

Between 1965-70 and 1975-80, the absolute numbers of five-year migrants declined as well in three regions but not in Bangkok or the Central region. The capital and the adjoining areas of the Central region apparently maintained their attraction for migrants in Thailand, with the flow to the Central region being accounted for in part by its greater proximity to Bangkok. The Central region grew in importance as the destination of "suburban" out-migrants from the capital as well as of those from other regions who moved directly to the surrounding urban areas instead of to the capital itself.

Although the magnetism of primacy and urbanism account in part for the changing patterns, the increasing scarcity of new land is probably also a key factor—allowing for less movement to other rural places and thereby promoting greater rural stability, or, when movement does occur, generating more movement to urban places. The plausibility of such a conclusion is suggested by an assessment of interprovincial migration during 1965-70 (Cochrane 1979:42). That analysis showed that migration streams in Thailand flowed toward the areas of highest income and available land; and the closer the area was to Bangkok, the greater was the outflow. Increased pressure on land was seen as increasing the flow of migrants, but the direction of migration depended on the availability of rural opportunities. This suggested that improvement in the rural situation could substantially slow movement to the capital, especially if opportunities in Bangkok did not expand considerably.

Nevertheless, some rural development in itself may not be enough to stem urbanward migration; the level of development achieved may also be important. Piampiti's (1985) research based on 1975-80 data, for example, found a negative correlation between per capita income and out-migration only in the provinces in the relatively affluent Central region. In the Northeast, the correlation was positive, suggesting that a minimum income level was necessary for people to afford migration. A limited amount of investment in rural development in the poorest regions of Thailand may therefore result in an effect opposite to that intended: Rather than decreasing rural-to-urban migration, it may facilitate such movement. Only when a higher level of development is reached, as in the Central region, does additional income help to curb mobility from the province.

Economic changes during this two-decade period have resulted in increasing contributions of manufacturing and services to Thailand's gross domestic product (GDP) and greater diversification in crop production and merchandise commodities and exports. Concurrently, however, the structure of wealth and income distribution has become more concentrated, and rural-urban income differentials have widened, as have regional differentials ("Strategy for Rural Development" 1982). For example, in 1960 Bangkok accounted for 23.8 percent of Thailand's GDP and the Northeast 17 percent. By 1979 Bangkok's share increased to 27.4 percent and that of the Northeast declined to 14.7 percent. The North and South also experienced declines whereas the Central plain, again reflecting its status as a "richer" area and its closer functional ties to Bangkok, increased from 29.3 to 31.2 percent.

These differential patterns are reflected somewhat in changes in per capita income. Between those same years, 1960 and 1979, the per capita income in Bangkok rose by 440 percent, from 5,630 to 30,161 baht. In the Northeast it increased by only 360 percent, from 1,082 to 4,991 baht (still below Bangkok's 1960 average), so that between 1960 and 1979 the Northeast average actually declined from 19.2 to only 16.5 percent of Bangkok's per capita income. The relative increase in the Central region exceeded that of Bangkok, but its 17,655 baht average in 1979, although well above that of the other regions, was still only 58 percent as high as Bangkok's. The North's per capita income, equal to 26.5 percent of Bangkok's in 1960, also increased somewhat faster than Bangkok's, but by 1979 it was still only 29 percent as high as the capital's. Thus for all regions, sharp income differentials with the capital persisted.

To the extent that many regional differentials are closely associated with rural development, it is understandable that Thailand's Fifth Development Plan (1982–86) places strong emphasis on the rural population, especially that in the 216 districts and 30 subdistricts located in 37 provinces in the Northeast, North, and South that have been identified as backward areas (Ad Hoc Sub-committee on Population 1981). These rural areas contain 7.5 million persons (about one-sixth of Thailand's population) and 75 percent of the poverty-stricken populations in the three regions. The plan calls for creation of 3 million rural jobs in the slack season; encouragement of village activities to improve water supplies, fisheries, and cattle banks; improvements in social infrastructure (education, public health, and legal services); and concerted efforts to promote foodstuff production, including restoration of soil fertility.

Various criticisms have been raised against the new rural development strategy ("Strategy for Rural Development" 1982:422), especially with respect to the accuracy of its assessment of the causes of the problems, the choice of target areas, and specific projects to be implemented. Nonetheless, because the new strategy recognizes the basic problems, the attention it gives to reducing rural poverty and enhancing the rural population's ability to help itself could significantly affect the quality of rural life. In so doing, together with continued efforts to lower rural fertility, it may reduce the pressures for rural out-migration. Its success will depend, however, not only on rural changes but also on whether the nation can achieve a more balanced pattern of population distribution and human settlement in relation to resources, national security, and job opportunities. Included in these efforts will be limiting the increase of the Bangkok Metropolis population while encouraging the formation and development of communities in rural areas that are suitable for basic social and economic investment so that these urban areas of low density can provide jobs for a wider population base (Ad Hoc Sub-committee on Population 1981:78-79).

The development indicators discussed here testify to the progress Thailand has made in its efforts to improve its population's living standards. They also document, quite unambiguously, that substantial differences still exist between regions, and that the Northeast, in particular, remains economically the most disadvantaged region in the nation while Bangkok continues to be the dominant center of the kingdom. In view of these conditions, and judged from other developing countries' experiences, the trends in migration characterizing Thailand up to 1970 may have been expected to continue and even to accelerate in the ensuing decade as development continued. That they apparently have not is a major finding of the current research.

These changing patterns thus call for analyses to assess more precisely the relations among the migration streams, social and economic differentials among provinces, and efforts at regional development. Additional tabulations from the sample census tapes will facilitate such analyses. Beyond such further exploitation of census data, new national surveys are needed to ascertain not only the factors leading to a decision to move and the choice of destination but also the reasons for nonmovement, especially among those who may have earlier considered migration. The extent of reliance upon circulation and commuting and how these relate to more permanent migration and to development also need to be explored in greater depth. The decline in migration between the late 1960s and the late 1970s argues strongly for gaining further insights into the reasons and their relation to development efforts and to changing conditions in Thailand's various regions. Such evaluations should be particularly useful for policymakers as well, providing insights into how the role of migration may change as development proceeds.

REFERENCES

Ad Hoc Sub-committee on Population

1981 *Population Plan, 1982–1986.* Bangkok: National Economic and Social Development Board, Office of the Prime Minister.

Arnold, Fred, and Mathana Phananiramai

1975 *Revised Estimates of the 1970 Population of Thailand.* Research Paper No. 1. Bangkok: National Economic and Social Development Board.

Arnold, Fred, and Supani Boonpratuang

1976 *Migration.* Subject Report No. 2. *1970 Population and Housing Census.* Bangkok: National Statistical Office.

ASEAN Population Programme

1981 *Migration in Relation to Rural Development.* Bangkok: Institute of Population Studies, Chulalongkorn University.

Bose, Ashish

1965 Migration streams in India. In *Contributed Papers, Sydney Conference,* pp. 597-606. Liège: International Union for the Scientific Study of Population.

Caldwell, John C.

1967 The demographic structure. In T.H. Silcock, ed., *Thailand: Social and Economic Studies in Development,* pp. 27-64. Canberra: Australian National University Press.

Chamratrithirong, Aphichat, Krittaya Archavanitkul, and Uraiwan Kanungsukkasem

1979 *Recent Migrants in Bangkok Metropolis: A Follow-up Study of Migrants' Adjustment, Assimilation, and Integration.* Bangkok: Institute for Population and Social Research, Mahidol University.

Chapman, Murray, and R. Mansell Prothero

1983 Themes in circulation in the Third World. *International Migration Review* 17 (winter):597–632.

Cochrane, Susan H.

1979 *The Population of Thailand: Its Growth and Welfare.* Staff Working Paper No. 337. Washington, D.C.: World Bank.

Das Gupta, A., and S. Sen Gupta

1967 Population projections for Thailand and a study of the elements and criteria. In *World Population Conference,* Vol. II, pp. 13–22. New York: United Nations.

Economic and Social Commission for Asia and the Pacific (ESCAP)

1982 *Country Reports,* Vol. V, *Migration, Urbanization, and Development in Thailand.* New York: United Nations.

Economic and Social Commission for Asia and the Pacific (ESCAP), Population Division

1984 *Urbanization in Thailand and Its Implications for the Family Planning Programme.* Population Research Leads, No. 17. Bangkok: Population Division, ESCAP.

Economic Commission for Asia and the Far East (ECAFE)

1967 *Report of the Expert Working Group on Problems of Internal Migration and Urbanization.* Bangkok: ECAFE.

Findley, Sally E.

1982 *Migration Survey Methodologies: A Review of Design Issues.* IUSSP Papers, No. 20. Liège: International Union for the Scientific Study of Population.

Goldstein, Sidney

1977 *Urbanization, Migration, and Fertility in Thailand.* Providence, R.I.: Population Studies and Training Center, Brown University.

Goldstein, Sidney, and Alice Goldstein

1978 Thailand's urban population reconsidered. *Demography* 15:239–58.

1981 *Surveys of Migration in Developing Countries: A Methodological Review.* Paper No. 71. Honolulu: East-West Population Institute, East-West Center.

Goldstein, Sidney, Pichit Pitaktepsombati, and Alice Goldstein

1976 Migration and urban growth in Thailand: An exploration of interrelations among origin, recency, and frequency of moves. In Anthony H. Richmond and Daniel Kubat, eds., *Internal Migration, The New World and The Third World,* pp. 116–47. Beverly Hills: Sage Publications.

Goldstein, Sidney, and David F. Sly

1975 *The Measurement of Urbanization and Projection of Urban Population.* Liège: International Union for the Scientific Study of Population.

The International Conference on Population, 1984

1984 *Population and Development Review* 10 (December):755–82.

Lim, E.R., J.D. Shilling, I.C. Porter, C. Chung, S.H. Cochrane, M. Cox, J.A. Edelman, C. Hermans, J.P. Meerman, and T. Ahmed

1980 *Thailand: Toward a Development Strategy of Full Participation.* World Bank Country Study. Washington, D.C.: World Bank.

Pejaranonda, Chintana, Fred Arnold, and Philip M. Hauser

1983 *Revised Estimates of the 1980 Population of Thailand.* Bangkok: National Statistical Office.

Pejaranonda, Chintana, Sidney Goldstein, and Alice Goldstein

1984 *Migration.* Subject Report No. 2. *1980 Population and Housing Census.* Bangkok: National Statistical Office.

Piampiti, Suwanlee

1985 *Internal Migration in Thailand, 1970–80.* Bangkok: National Institute of Development Administration.

Prachuabmoh, Visid, Ralph Thomlinson, Lincoln Polissar, Pricha Saengswang, Nibhon Debavalaya, Nangnoi Namatra, Sidney Goldstein, Dov Friedlander, James Fawcett, Allan Rosenfield, and John Knodel

1971 *The Methodology of the Longitudinal Study of Social, Economic, and Demographic Change in Thailand.* Research Report No. 6. Bangkok: Institute of Population Studies, Chulalongkorn University.

Robinson, Warren, and Chupensri Wongbuddha

1980 A revised set of urban population estimators for Thailand. In Warren Robinson, ed., *Studies in Thai Demographic-Economic Planning,* pp. 36–52. Bangkok: Population and Manpower Planning Division, National Statistical Office.

Shryock, Henry, Jacob Siegel, and Associates

1976 *The Methods and Materials of Demography.* Condensed edition by Edward G. Stockwell. New York: Academic Press.

Strategy for rural development

1982 *Bangkok Bank Monthly Review* 23 (October):414–22.

Thailand, National Economic Development Board

1957 *Final Report of the Demographic and Economic Survey of Thailand, 1954,* Vol. 2, *Demographic and Economic Features.* Bangkok: Central Statistical Bureau.

Thailand, National Statistical Office

1962 *Thailand Population Census, 1960.* Bangkok.

1972 *Statistical Yearbook of Thailand, 1970–1971.* Bangkok.

1973 *Thailand Population and Housing Census, 1970.* Bangkok.

1976 *Statistical Yearbook Thailand, 1974–1975.* Bangkok.

1978 *Report: The Survey of Population Change, 1974–1976.* Bangkok.

1983a *The Survey of Migration in Bangkok Metropolis, Nonthaburi, Pathumthani, and Samkut Prakan: 1983.* Bangkok.

1983b *Thailand Population Census, 1980.* Bangkok.

1984 *Statistical Yearbook of Thailand, 1981-84.* Bangkok.

Tirasawat, Penporn

1977 Urbanization and migrant adjustment in Thailand. Unpublished Ph.D. dissertation, Department of Sociology, Brown University, Providence, R.I.

United Nations

1970 *Methods of Measuring Internal Migration.* Population Studies No. 47. New York.

1982 *World Population Trends and Policies, 1981 Monitoring Report,* Vol. 2, *Population Policies.* Population Studies No. 79. New York.

1984 *Population Distribution, Migration and Development. International Conference on Population, 1984, Tunisia.* New York.

1985 *World Population Trends, Population and Development Interrelations and Population Policies: 1983 Monitoring Report,* Vol. 1, *Population Trends.* Population Studies No. 93. New York.

United States, Bureau of the Census

1964 *1960 Census of Population,* Vol. 1, *Characteristics of the Population,* Part 1, *United States Summary.* Washington, D.C.: Government Printing Office.

World Bank

1984 *World Development Report 1984.* New York: Oxford University Press.

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Michael J. Levin
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ABSTRACT This paper reports on fertility estimates derived by applying the own-children method of fertility estimation to census data for seventeen island groups in the South Pacific region. Estimates were computed from three successive censuses for two island groups; two successive censuses for ten island groups; and one census for five island groups. Since each application of the own-children method provided fertility estimates for a ten- to fifteen-year period previous to the census, overlapping trend estimates were obtained for the twelve island groups for which at least two successive censuses were analyzed. This overlap provided a basis for checking the consistency of the fertility estimates. Trend estimates were also calculated for marital fertility and the Coale-Trussel *m* index of marital fertility control. Marital fertility estimates were computed by dividing the own-children estimates of age-specific birth rates by corresponding age-specific proportions currently married (also census-derived), and the *m* index of marital fertility control was calculated from the derived age pattern of marital fertility. The own-children fertility estimates are compared with estimates based on vital registration or other sources where available. Due to the unavailability of census tapes for some countries, not all island groups in the South Pacific are included in this analysis, but the coverage is complete enough to provide a broad picture of fertility levels and trends in the region over the past two decades.

Evidence on recent fertility trends in Pacific Island nations is not abundant, and that which exists tends to be scattered in papers and reports that are sometimes difficult to obtain. Yet all of these countries take censuses on a regular basis, and a great deal of information about fertility can be extracted from them. A method for doing so that is especially useful when census tapes of individual household records are available is the own-children method of fertility estimation. This is the method we have used, complemented by other demographic estimation techniques where appropriate.

For the most part, the basic own-children fertility estimates presented here were generated in a series of fertility estimation workshops held at the East-West Center over a period of several years. The series was coordinated by Michael Levin and involved the active collaboration of many persons, mostly from the Pacific Islands themselves. As the workshops progressed, it became apparent that a large and useful body of fertility estimates was accumulating. In some cases, fertility estimates were being produced where none existed before. In others, the fertility estimates derived by the own-children method could be compared with fertility estimates derived from the vital registration system, thereby providing checks for consistency and accuracy.

We decided to gather the material into a paper that would present and compare recent fertility trends in the Pacific Island nations that had participated in the workshops. These nations include most of the South Pacific region, the most notable exclusion being French Polynesia. We also decided to extend the original tabulations produced in the workshops by adding further tabulations of nuptiality indices and martial fertility, derived by straightforward extension of the own-children methodology as well as related demographic estimation techniques. In the end, we were able to produce estimates of trends in both overall fertility and marital fertility, as well as trends in a demographic index of marital fertility control.

This report emphasizes the estimates themselves, without much interpretation. So diversified are the socioeconomic and population policy contexts in the region that a comprehensive interpretation of the results would have been difficult and would have lengthened an already rather long report. It is hoped that the interesting and sometimes unexpected fertility patterns uncovered here will stimulate further, more interpretative studies.

METHODOLOGY AND DATA

The own-children method has been described in earlier publications and needs only to be recapitulated briefly here. (For more detailed accounts, see, for example, Cho 1973 and Retherford and Cho 1978; the current versions of the own-children computer programs use formulas given in the second of these two sources.) The method is a census- or survey-based reverse-survival technique for estimating age-specific birth rates for years previous to a census or household survey. In most applications, enumerated children are first matched to mothers within households on the basis of responses to questions on age, sex, marital status, relation to head of household (or householder), and number of children still living. (In this paper, however, matching was based in some cases on a special question on mother's line number or person number in the household schedule, if mother was present.) These matched (i.e., own) children, classified by child's age and mother's age, are reverse-survived to estimate numbers of births by age of mother in previous years. Reverse-survival is also used to estimate numbers of women in previous years. After adjustments are made for incorrect enumeration and unmatched (non-own) children, age-specific birth rates are calculated by dividing the number of births by the number of women. Estimates are computed for each previous year or group of years back to fifteen years before the census. Estimates are not computed further back than fifteen years because births must then be based on children at ages 15 or older at enumeration, a large proportion of whom do not reside in the same household as their mother and hence cannot be matched. All calculations are done initially by single years of age and time (years before the census). Estimates for groups of ages or groups of calendar years are obtained by appropriately aggregating numerators and denominators of single-year rates and then dividing the aggregated numerator by the aggregated denominator. For reasons of economy, the method is usually applied to census samples rather than complete counts, but in this paper the applications are to complete counts since the populations are comparatively small.

Non-own (unmatched) children are allocated to mothers by multiplying each age-specific category of own (matched) children, specified by mother's age, by the corresponding age-specific ratio of all children to own children. Thus the number of own children at a given age is adjusted upward by the same factor regardless of mother's age, thereby introducing some error in the fertility estimates since the proportionate distribution of non-own children by age of mother generally differs somewhat from the proportionate distribution of own children by age of mother. It is, of course, impossible to specify non-own adjustment factors by mother's age, since the mother of an unmatched child is by definition not in the household. Since older women are usually in more stable household situations than younger women, the nature of the error from not specifying non-own adjustment factors by mother's age is usually to reallocate erroneously a certain proportion of non-own children of a given age from younger mothers to older mothers. This error, if present, usually has little effect on the total fertility rate, but it produces an age pattern of fertility that is too low at the younger ages and too high at the older ages. The error is minor if the adjustment factors for non-own children are low, but sometimes these factors can be quite high.

Figure 1 shows the seventeen island groups included in this study. Table 1 shows the date of each census to which the own-children method was applied, as well as background information on population size, average annual population growth rate (computed from population totals from the most recent census included in our analysis and the preceding census), sex ratio, Myers's index of digit preference (a measure of the quality of age reporting, described in Shryock and Siegel 1973: vol. 1, pp. 206–8), area, and population density at the time of the census. Population sizes range from just under 4,000 for Niue in 1976 to almost 600,000 for Fiji in 1976. Population densities are highly variable in the region, ranging from seven persons per square kilometer in Solomon Islands in 1976 to 317 in Truk in 1980. Male/female sex ratios of population range from 0.87 in Tuvalu in 1979 to 1.11 in the Northern Mariana Islands in 1980. Such extreme sex ratios may be due to sex-selective undercounts or sex-selective migration, the latter being more likely. Mainly because of variations in fertility and migration patterns, annual population growth rates range from –5.2 percent in Niue to 4.1 percent in Tuvalu. The quality of age reporting, as indi-

Table 1. Selected demographic indicators

Island group	Census date	Population	Intercensal growth rate	Sex ratio (M/F)	Myers's Index	Area (km²)	Population density (/km²)
Melanesia							
Fiji	13/9/1976	588,068	2.1	1.02	2.1	18,272	32
Solomon Islands	8/2/1976	196,823	3.3	1.09	3.2	28,530	7
Micronesia							
Guam	1/4/1980	105,979	2.2	1.09	2.1	541	196
Kiribati	13/12/1978	56,452	1.7	0.97	4.6	690	82
TTPI	26/3/1967	91,448		1.05	NA	1,832	50
	18/9/1973	115,251		1.07	1.0	1,832	63
	1/4 & 15/9/1980	132,929	2.0	1.06	3.0	1,832	73
NMI	18/9/1973	14,333		1.09	1.9	471	30
	1/4/1980	16,780	2.4	1.11	1.6	471	36
Marshalls	18/9/1973	25,045		1.07	2.1	179	140
	15/9/1980	30,873	3.0	1.06	3.9	179	172
Palau	18/9/1973	12,673		1.09	2.0	460	28
	15/9/1980	12,116	-0.6	1.08	3.2	460	26
FSM	18/9/1973	62,[illegible]31		1.05	1.0	722	87
	15/9/1980	73,160	2.2	1.05	2.9	722	101
Ponape & Kosrae	18/9/1973	23,252		1.05	1.5	483	48
	15/9/1980	27,572	2.4	1.03	2.4	483	57
Truk	8/9/1973	31,609		1.05	1.5	118	268
	15/9/1980	37,488	2.4	1.05	3.6	118	318

Yap	18/9/1973	7,870		1.06	1.7	121	65
	15/9/1980	8,100	0.4	1.04	4.5	121	67
Polynesia							
Niue	29/9/1976	3,843	-5.2	1.01	3.7	259	15
American Samoa	25/9/1974	29,190		1.02	6.9	197	148
	1/4/1980	32,297	1.8	1.03	2.6	197	164
Western Samoa	25/9/1961	114,427		1.06	3.1	2,935	39
	21/9/1966	131,377		1.07	7.0	2,935	45
	3/11/1971	146,626	2.2	1.07	1.1	2,935	50
Tonga	30/11/1966	77,429		1.06	4.4	699	111
	30/11/1976	90,085	1.5	1.05	3.7	699	129
Tuvalu	27/5/1979	7,357	4.1	0.87	4.0	26	283

Sources: **Fiji**: Zwart (1968); Fiji, Parliament of Fiji (1976: vol. 1, table 6).
Solomon Islands: Groenewegen (1970).
Guam: U.S. Department of Commerce (1973a; 1980).
Kiribati: Groenewegen and Bailey (1975); Kiribati, Ministry of Home Affairs (1980: table 5).
Trust Territory of the Pacific Islands: University of Hawaii (n.d.); U.S. Department of Commerce (1973b: table 3; 1983b: table 16).
Niue: Niue, Department of Justice (1974; 1978).
American Samoa: Government of American Samoa (n.d.); U.S. Department of Commerce (1983b: table 16).
Western Samoa: Government of Western Samoa (1962; 1968; n.d.).
Tonga: Fiefia (1966: table 5); Kingdom of Tonga (1976: table 1).
Tuvalu: Groenewegen and Bailey (1975); Government of Tuvalu (1980).

Notes: TTPI denotes Trust Territory of the Pacific Islands. NMI denotes Northern Mariana Islands. FSM denotes Federated States of Micronesia. For TTPI in 1980, the Northern Marianas census was taken 1 April 1980, and the remainder of the TTPI was taken 15 September 1980.

Growth rates are average annual growth rates (in percentages) for the period between the most recent census and the immediately preceding census for each island group. For some of the island groups in the table, the date of the previous census is not indicated; the dates of the previous censuses are 1966 for Fiji, 1970 for Solomon Islands, 1973 for Kiribati, 1971 for Niue, and 1973 for Tuvalu. Ages used to calculate Myers's Index are 13 to 62, for both sexes combined. Sex ratios are based on the total population of all ages.

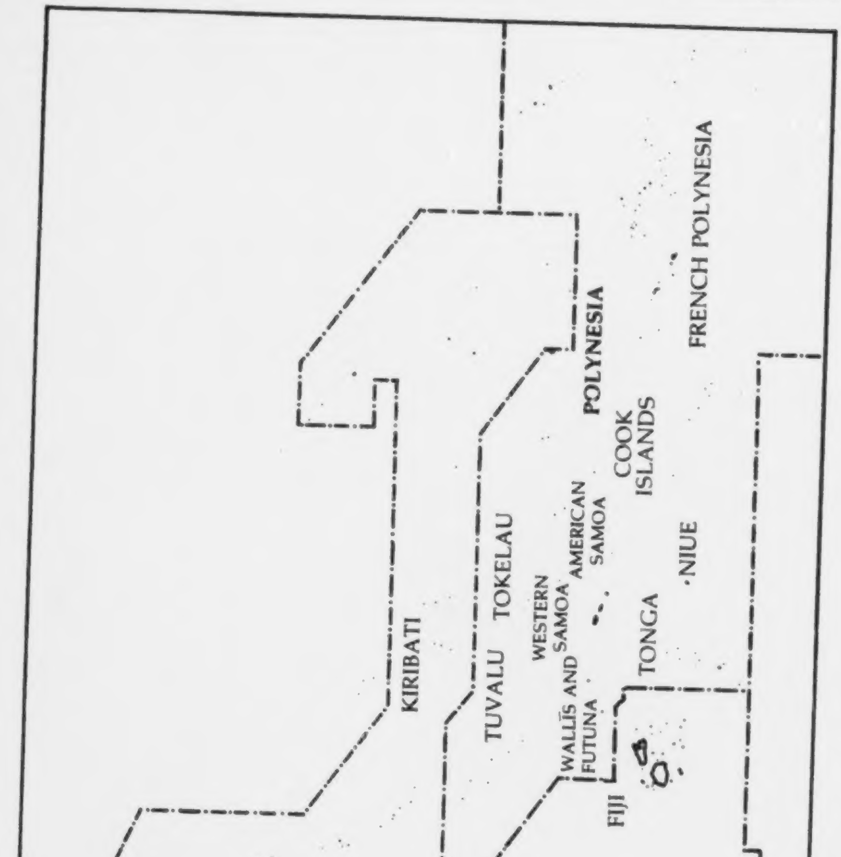
NORTHERN MARIANA ISLANDS
GUAM
MICRONESIA
MARSHALL ISLANDS
Yap
Truk
Ponape
Kosrae
PALAU
FEDERATED STATES OF MICRONESIA
NAURU
KIRIBATI
PAPUA NEW GUINEA
SOLOMON ISLANDS
MELANESIA
VANUATU
NEW CALEDONIA
AUSTRALIA
TUVALU
TOKELAU
WALLIS AND FUTUNA
WESTERN SAMOA
AMERICAN SAMOA
FIJI
TONGA
NIUE
COOK ISLANDS
POLYNESIA
FRENCH POLYNESIA

Figure 1. The South Pacific region

cated by Myers's index (based on ages 13–62), is rather good, ranging between index values of 1.0 and 7.0. We shall refer to these statistics again when interpreting fertility estimates presented later in the paper.

Proportions of non-own children to all children by age of child, shown in Table 2, are not the same as the non-own adjustment factors themselves. If the proportions in Table 2 are denoted by R_i, where i denotes age of child, then the multiplicative non-own adjustment factors described in the previous paragraph are calculated as $1/(1-R_i)$. The table shows that non-own factors tend to increase fairly smoothly with age of child, which is expected since an older child is usually more likely than a younger child to be living in another household or to have a deceased mother. The table shows also that the magnitude of the non-own proportions differs widely from one island group to another. For example, in Guam the proportions never exceed 8 percent, while in Yap and Western Samoa they sometimes exceed 45 percent.

Guam differs significantly from the other island groups because of the presence of the U.S. military and a generally Western economy and social organization. The other island groups share common cultural features such as migration to urban areas for work or schooling, movement among islands to visit relatives or friends, migration to other countries (mainly the United States, New Zealand, and Australia), and a fair amount of adoption. Unlike Western-style adoption, adoption in the Pacific is usually between relatives and serves to solidify social and political ties (Carroll 1970). The effect of both back-and-forth migration (which is often temporary, with children left in the care of relatives) and adoption is to increase the proportion of non-own children.

In Table 2, the non-own proportions are labeled either RHH (match of children to mothers based on relation to head of household, or householder, and the other attributes mentioned earlier) or MPN (match based on mother's person number or line number in the household schedule). (For a description of the computer algorithm used in RHH matching, see Ho 1977.) MPN matching is useful in cases where households are large and complex and non-own proportions are large, and it usually results in a slight improvement in the accuracy of the fertility estimates (Levin and Retherford 1982).

Reverse-survival requires life tables, and the sources for these are shown in Table 3. In most cases, life tables were obtained through use of census questions on number of children ever born and number of children still living. By means of a method developed by Brass (1975), this child survivorship information was used to obtain estimates of child mortality that were in turn matched to the appropriate level of the Coale–Demeny Model West life table family (Coale and Demeny 1966). (The procedure for obtaining

Table 2. Percentage of all children who are non-own, by age of child

Island group	Census year	Type of match[a]	Age of child														
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Melanesia																	
Fiji																	
Fijians	1976	MPN	8.7	13.9	16.0	18.2	19.8	20.5	21.6	22.2	22.3	23.0					
Indians	1976	MPN	6.4	7.1	6.9	7.8	7.7	8.4	9.31	10.2	10.9	11.4					
Solomon Islands	1976	RHH	2.6	4.2	6.2	7.7	8.0	9.1	10.5	11.9	13.0	14.9	15.0	18.9	20.3	22.3	
Micronesia																	
Guam	1980	MPN	2.7	3.9	3.6	3.7	4.2	5.1	4.7	5.9	5.2	5.3	5.9	7.1	7.4	7.9	7.9
Kiribati	1978	MPN	3.6	11.3	15.7	17.8	21.3	22.0	24.0	21.8	23.8	24.3	26.6	28.2	32.9	34.0	37.0
TTPI	1967	MPN	9.5	13.0	15.8	16.4	17.1	17.7	17.8	19.6	21.0	20.9	22.1	25.8	27.3	28.9	28.2
	1973	RHH	10.1	12.6	15.4	15.9	17.6	16.9	18.2	18.6	19.7	20.3	20.6	22.1	22.4	26.5	33.4
	1980	MPN	9.2	12.6	14.5	13.2	15.2	16.9	17.8	18.2	17.8	20.3	21.6	22.9	23.0	27.8	29.3
NMI	1973	RHH	8.2	8.1	10.9	11.7	13.9	12.7	13.2	12.1	10.7	12.7	12.5	13.5	14.0	17.0	20.1
	1980	MPN	5.6	9.3	7.3	5.4	10.3	9.1	11.1	12.5	13.1	13.3	14.5	15.4	13.1	17.3	15.5
Marshalls	1973	RHH	12.7	18.2	18.3	20.3	20.9	19.3	19.1	20.7	21.2	23.0	23.5	26.0	28.2	29.2	37.0
	1980	MPN	9.8	13.8	14.9	13.9	16.4	15.9	18.3	16.6	18.4	18.1	20.6	21.6	23.1	27.7	29.4
Palau	1973	RHH	17.3	21.4	26.5	25.3	27.6	29.2	27.1	27.8	29.6	20.9	27.9	25.5	26.1	30.7	41.9
	1980	MPN	15.0	23.9	25.4	22.6	24.0	28.9	24.3	25.9	21.9	26.8	30.4	27.4	27.5	27.3	27.0
Ponape & Kosrae	1973	RHH	7.4	10.3	13.2	13.4	14.0	13.1	14.6	15.9	17.0	17.1	18.0	18.1	16.8	22.8	28.3
	1980	MPN	5.8	9.7	10.6	8.7	8.7	11.3	11.2	12.4	10.5	14.4	13.2	13.2	14.3	12.8	16.1
Truk	1973	RHH	7.6	8.3	12.5	12.9	14.6	13.6	16.6	14.6	17.4	18.3	18.4	19.8	21.5	26.8	33.9
	1980	MPN	8.6	8.6	11.5	10.2	10.7	12.3	11.9	13.0	13.7	14.7	15.5	17.2	15.8	20.4	20.4

Yap	1973	RHH	13.4	13.1	18.5	16.1	22.8	23.3	27.1	30.8	30.2	31.3	30.8	31.0	34.5	38.5	46.7
	1980	MPN	9.4	12.6	12.6	18.4	19.2	18.9	23.9	22.9	18.4	25.0	22.9	26.8	26.5	35.2	38.8
Polynesia																	
Niue	1976	MPN	5.9	20.8	19.4	14.4	21.6	19.2	19.8	29.1	29.6	27.5					
American Samoa	1974	MPN	13.2	15.5	18.6	17.2	19.2	21.0	17.5	20.3	20.1	20.2	21.9	24.1	21.5	27.9	27.8
	1980	MPN	9.9	10.4	9.4	11.9	12.6	12.2	12.0	13.4	14.4	12.7	15.4	16.5	15.1	15.9	20.3
Western Samoa	1961	RHH	24.6	24.2	21.8	20.8	19.8	19.4	21.7	21.5	22.9	21.8	23.9	24.6	28.9	32.1	33.2
	1966	RHH	17.2	20.4	24.2	24.1	25.3	26.8	29.4	31.3	32.7	34.6	34.8	36.1	40.7	42.2	48.1
	1971	RHH	12.0	17.0	19.0	20.3	20.6	23.0	23.5	27.0	26.9	29.7	31.8	34.3	37.6	40.7	45.4
Tonga	1966	RHH	4.0	6.6	8.2	10.8	12.5	11.2	8.1	10.0	10.5	11.1	12.4	12.5	14.2	16.4	17.6
	1976	RHH	8.5	9.0	10.7	10.5	10.0	9.0	10.0	8.7	9.3	8.9	8.0	7.1	6.8	5.2	3.5
Tuvalu	1979	MPN	4.4	20.6	18.7	20.7	25.2	21.2	28.5	25.6	25.8	24.7	21.8	44.3	54.9	48.2	41.7

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a. RHH indicates that matching of children to mothers was accomplished using information on relationship to head of household (along with age, sex, marital status, and number of living children). MPN indicates that matching was done on the basis of mother's person number in the household schedule, which was used in some of the censuses.

Table 3. Life tables used for generating own-children fertility estimates

		Life tables[a]	
Island group	Census year	Source	e_0^o
Melanesia			
Fiji			
Fijians	1976	CD West 20.0	67.6
Indians	1976	CD West 20.0	67.6
Solomon Islands	1976	Brass	54.0
Micronesia			
Guam	1980	CD West 23.1	75.3
Kiribati	1978	Brass	53.7
TTPI	1967	CD West 19.0	65.1
	1973	CD West 18.0	62.6
	1980[b]	—	—
NMI	1973	CD West 19.8	67.1
	1980	CD West 20.4	68.6
Marshalls	1973	CD West 16.9	59.8
	1980	CD West 18.7	64.3
Palau	1973	CD West 19.5	66.3
	1980	CD West 21.1	70.3
FSM	1973[b]	—	—
	1980[b]	—	—
Ponape & Kosrae	1973	CD West 18.7	64.3
Ponape	1980	CD West 20.3	68.3
Kosrae	1980	CD West 19.8	67.1
Truk	1973	CD West 17.5	61.3
	1980	CD West 19.2	65.6
Yap	1973	CD West 18.7	64.3
	1980	CD West 19.8	67.1
Polynesia			
Niue[c]	1976	CD West 20.5	68.8
American Samoa	1974	CD West 22.7	74.2
	1980	CD West 23.1	75.3
Western Samoa[c]	1961	CD West 18.5	63.8
	1966	CD West 19.4	66.1
	1971	CD West 20.0	67.6

Table 3. (*continued*)

Island group	Census year	Life tables[a]	
		Source	e_0^f
Tonga	1966	CD West 19.5	66.3
	1976	CD West 21.9	72.3
Tuvalu	1979	Brass	60.4

a. In each row of the table, the indicated life tables were applied to data from the indicated census to generate own-children fertility estimates for each of the fifteen years previous to the census. In the sources, CD denotes Coale and Demeny (Coale and Demeny 1966).

b. Mortality estimates for each district or state were used in making the fertility estimates; fertility estimates for each of these two areas as a whole were constructed by aggregating estimates for their component parts, and therefore non-own factors were not computed.

c. Niue and Western Samoa 1971 used changing mortality, starting with the CD level given and decreasing by 0.1 level per year. Western Samoa 1961 and 1966 used a decrease of 0.2 level per year.

the usual Brass estimates and matching them to Coale–Demeny model life tables is built into the own-children computing package; see Midkiff and Choe 1978.) The level so obtained specified life tables that were then used to derive reverse-survival ratios (for details, see Retherford 1978 and Retherford and Cho 1978). For Solomon Islands, Tuvalu, and Kiribati, a somewhat different methodology developed by Brass was used (Brass 1971; Macrae 1980:142ff.; Kiribati, Ministry of Home Affairs and Decentralisation 1983; Solomon Islands, Ministry of Finance 1981).

In most of the applications, constant mortality was assumed during the fifteen-year estimation period previous to the census to which the own-children method was applied. In some cases, as indicated in the footnotes to Table 3, allowance was made for mortality decline over the estimation period. In Niue, it was simply assumed that the Model West level number increased by 0.1 per year over the estimation period. In Western Samoa, life tables at two different dates were interpolated to obtain life tables and reverse-survival ratios for intervening years. (For details of the interpolation procedure, see Retherford and Cho 1978.)

Some of the mortality estimates in Table 3 may be too low (life expectancy too high) because of a tendency for respondents to selectively omit mention of dead children when responding to the child survivorship questions. If such omissions occur, the reverse-survival factors for children tend to be too low, and the own-children fertility estimates tend to be biased downward. But at prevailing mortality levels (life expectancy in the neighborhood of 60 years), the reverse-survival factors are already close to one and are quite insensitive to errors of even several years of life expectancy.

(See Retherford, Chamratrithirong, and Wanglee 1980; in the case of Thailand, with an average life expectancy also around 60 years, it was found that a mortality estimation error as high as 16 years of life expectancy generated fertility estimation errors of 8 percent or less.) Hence the possible underestimation of mortality in some of the island groups considered here produces only a slight downward bias in the fertility estimates.

We obtained own-children estimates of age-specific marital birth rates in the following way: First, age-specific proportions currently married in five-year age groups were obtained from two or more censuses and linearly interpolated between censuses to get age-specific proportions currently married in five-year age groups in each intercensal year. Sometimes the estimated birth rates pertain to calendar years earlier than the earliest census from which age-specific proportions currently married are available. In this case, the trend lines for age-specific proportions currently married were extrapolated backward in time from the earlier of the two censuses. In this way we obtained for each geographic unit an array of age-specific proportions currently married, with age in five-year age groups along one dimension, and time in single calendar years (or midpoints of time periods) along the other dimension. The original own-children analysis provided a corresponding array of age-specific birth rates for all women. From these two matrices we obtained a third array of age-specific marital birth rates by dividing, term by term, the array of age-specific birth rates by the array of age-specific proportions currently married. This calculation assumes that all births occur within marriage. As discussed later, this assumption is only approximately met, and more so in some island groups than in others; violation of this assumption may introduce bias.

Marital total fertility rates (but not total fertility rates for all women) pertain only to ages 20-49. The MTFR including ages 15-19 is not a good measure because it weights the birth rate at ages 15-19, which in several of the island groups is high but based on relatively few married women because of moderately late marriage, to the same extent that it weights birth rates at older ages. Moreover, as we shall see, in some island groups the estimated age-specific marital birth rate at 15-19 is severely biased, and in others it follows a trend quite different from that at older ages. Thus a measure that accords undue weight to fertility at 15-19 can produce a distorted picture of overall marital fertility trends. We deal with this problem of computing the MTFR by summing age-specific marital birth rates over ages 20-49 instead of 15-49. MTFR trends are then more consistent with overall fertility trends, but at the cost of some loss of information.

We obtained age-specific proportions never married in the same way that we obtained age-specific proportions currently married. First, we obtained age-specific proportions never married in five-year age groups from two or more censuses and linearly interpolated them between censuses to get age-specific proportions never married in five-year age groups at midpoints of intercensal time periods or subperiods. We used linear extrapolation when the time period fell outside the intercensal interval for which we had data for both end points. Each set of age-specific proportions never married so derived provided the basis for calculating a value of the singulate mean age at marriage (SMAM), which we have used as our summary measure of nuptiality. (SMAM actually reflects cohort as well as period nuptiality; for details of its calculation, see Shryock and Siegel 1973: vol. 1, p. 295.)

We also computed the Coale-Trussell *m* index of marital fertility control (Coale and Trussell 1974, 1975, 1978; a computer program developed by James Trussell at Princeton University's Office of Population Research was used for this purpose). This index measures the deviation from the typical age pattern of natural fertility, defined as fertility in the absence of deliberate family limitation, that results from deliberate family limitation. The *m* index depends on the shape of the age-specific marital fertility schedule, not on the level of marital fertility. In the natural fertility situation, the shape of the schedule is convex throughout the reproductive ages, whereas in the family limitation situation it is concave at the older reproductive ages. For purposes of constructing the *m* index, the standard age schedule of natural fertility is obtained as the arithmetic average of ten of the age-specific natural marital fertility schedules designated by Henry (1961). If the observed age-specific fertility schedule has the same shape as that of the standard age-specific natural fertility schedule, $m = 0$. If the observed schedule deviates from the standard schedule by an amount that is the average deviation of forty-three reasonably reliable marital fertility schedules in the early 1960s, representing a range of differences in the extent of fertility control, then $m = 1$. Values of *m* higher than 1 are also possible.

We did not adjust for incorrect enumeration (age-selective undercount or age misreporting) because the data necessary to compute adjustment factors were unavailable. If the undercount is proportionately the same for each sex at each age, however, the own-children fertility estimates are unaffected, since estimated numerators and denominators of birth rates are subject to the same multiplicative errors, which cancel. Age misreporting is potentially a more serious problem. A jagged up-and-down trend in annual fertility estimates may indicate the presence of age misreporting, in which case the estimates should be interpreted cautiously. However, if Myers's index is low, as is usually true in the South Pacific, the jagged trend may be real and partly due to the small size of the population under consideration, which means that large local fluctuations are less likely to average to a smooth trend for the nation as a whole.

The own-children fertility estimates may also be biased by migration. Many of the populations examined here have experienced high rates of out-migration in recent decades. If, before moving, out-migrants have about the same age-specific birth rates as nonmigrants, and if out-migrants take their children with them, then the own-children estimates of age-specific fertility for earlier years, based on nonmigrants present at the time of the census, should be about the same as if the migrants had actually been present. If women who migrate leave their children behind in the temporary care of relatives, however, the own-children fertility estimates will be biased upward, even if out-migrants and nonmigrants have identical age-specific fertility. In this case the children of migrants are treated as non-own and allocated to reverse-survived nonmigrant women.

If the own-children method is applied to two or more consecutive censuses, so that the estimated trends in fertility, marital fertility, and the *m* index overlap to some extent, then close agreement of the overlapping trends probably indicates that migration, as well as other sources of error such as age misreporting, is not a serious source of bias. If, say, the own-children fertility estimates are based on two censuses ten years apart, the own-children fertility estimates for a given year during the period of overlap are based on women who are approximately ten years older in the second census than the first. Since migration rates vary sharply by age, the overlapping estimates from the two consecutive censuses are not likely to be distorted to the same extent by migration. Therefore, if migration seriously distorts the own-children fertility estimates, one expects the agreement of the overlapping trends to be poor. In most of the populations examined in this paper, more than two censuses are available, so that overlapping trends of fertility estimates can be checked for consistency.

In comparing own-children estimates of fertility with estimates based on vital registration, we shall usually assume that the own-children estimates of the total fertility rate (TFR) are more accurate than comparable estimates based on vital registration, which are almost always lower. Estimates of birth rates based on both vital registration (birth rate numerators) and census data (birth rate denominators) tend to be biased downward when vital registration is incomplete, except in cases where the rate of census undercount is at least as great as the rate of underregistration. The own-children fertility estimates, on the other hand, tend to be affected little by census undercount. Census undercount tends to affect entire households, so that age-specific child-woman ratios are affected little. In this regard the own-children estimates of age-specific birth rates can be viewed as mortality-adjusted age-specific child-woman ratios. The comparisons between fertility estimates based alternatively on own children and vital registration are more valid when the data are aggregated over several calendar years. Aggregation tends to average out biases due to age misreporting.

FINDINGS

Findings are presented in Tables 4 and 5 and Figures 2-6, supplemented by Appendix Tables 1-3. The presentation of findings is by island group, where island groups are further grouped according to whether they are in Melanesia, Micronesia, or Polynesia (see Figure 1). Table 4 and Figures 2-6 show levels and trends of total fertility rates (TFRs), marital total fertility rates (MTFRs), age-specific birth rates (ASBRs), age-specific marital birth rates (ASMBRs), singulate mean ages at marriage (SMAM), and the *m* index of marital fertility control. Finally, Table 5 makes limited comparisons between fertility estimates derived by the own-children method and fertility estimates based on alternative sources, usually vital registration for births and census counts of women for birth rate denominators. Detailed age-specific birth rates, marital birth rates, and proportions currently married to supplement these tables and figures are given in Appendix Tables 1-3. The country-by-country summary that follows draws information from these and earlier tables and figures but usually omits specific reference to them in order to minimize repetition.

Melanesia

Only two island groups of Melanesia are considered here, Fiji and Solomon Islands.

Fiji

Fiji has the largest population of all the island groups considered in this paper, with almost 600,000 people in 1976. About half are indigenous Fijians, and the other half are Indians, originally brought in by the British as laborers. Fiji's land area is also comparatively large, so population density is moderate. The population has been growing at about 2 percent annually. At 1.02, the sex ratio slightly favors males. Myers's index of digit preference is 2.1, indicating reasonably accurate age reporting. Non-own factors are about twice as high for the Fijians as for the Indians, perhaps because of the tradition of adoption among Fijians. (Another possible explanation—differential rates of emigration between Fijians and Indians—is unlikely, because out-migration rates are much higher for Indians.) Life expectancy is about 68 years for both Fijians and Indians.

During the estimation period 1962-76, fertility declined substantially for both groups, especially during the 1960s, then leveled off somewhat in the first half of the 1970s. The decline in marital fertility for Indians was especially pronounced, the MTFR falling from about 7 to 4 between 1962 and 1976. These values would be higher if our MTFR calculation did not exclude fertility at ages 15-19. This exclusion also explains why the TFR in Table 4, which includes ages 15-19, sometimes exceeds the MTFR.

Table 4. Total fertility rates, marital total fertility rates, singulate mean ages at marriage, and values of the *m* index of marital fertility control (rates per woman)

Island group	Census[a] year	Period of estimate[b]	TFR	MTFR	SMAM	*m*
Melanesia						
Fiji						
Fijians	1976	1962–66	5.95	7.40	22.4	.37
		1967–71	5.16	6.48	22.4	.40
		1972–76	4.53	5.84	22.2	.56
Indians	1976	1962–66	6.28	6.28	19.7	.49
		1967–71	4.40	4.65	20.5	.83
		1972–75	3.55	4.00	20.9	1.15
Solomon Islands	1976	1967–71	6.97	8.56	22.6	.14
		1972–76	7.66	9.02	21.6	.09
Micronesia						
Guam	1980	1966–70	4.24	5.02	21.1	.30
		1971–75	3.55	4.24	21.5	.62
		1976–80	3.02	3.71	21.9	.92
Kiribati	1978	1964–68	6.85	7.85	19.7	.16
		1969–73	5.13	6.04	20.1	.30
		1974–78	4.51	5.51	20.6	.48
TTPI	1967	1953–57	6.87	7.88	21.5	.36
		1958–62	7.40	8.85	21.8	.36
		1963–67	7.08	8.85	22.1	.31
	1973	1959–63	7.39	8.28	21.1	.32
		1964–68	7.76	9.02	21.4	.17
		1969–73	7.36	8.85	21.7	.16
	1980	1966–70	7.41	8.73	21.5	.18
		1971–75	6.91	8.36	21.8	.13
		1976–80	6.28	7.80	22.1	.20
NMI	1973	1959–63	8.00	9.11	22.1	.33
		1964–68	7.68	9.11	22.4	.37
		1969–73	6.20	7.67	22.8	.50
	1980	1966–70	6.81	8.20	22.5	.32
		1971–75	4.90	6.18	22.9	.41
		1976–80	4.24	5.49	23.2	.80
Marshalls	1973	1959–63	7.92	8.88	20.8	.30
		1964–68	8.72	9.85	20.8	.19
		1969–73	8.42	9.64	20.8	.14

Table 4. (*continued*)

Island group	Census[a] year	Period of estimate[b]	TFR	MTFR	SMAM	*m*
	1980	1966-70	8.14	9.26	20.8	.25
		1971-75	7.92	8.94	20.8	.16
		1976-80	7.88	8.87	20.8	.14
Palau	1973	1959-63	8.25	10.07	22.0	-.01
		1964-68	8.47	10.88	22.8	-.17
		1969-73	6.62	8.99	23.7	.10
	1980	1966-70	7.42	9.76	23.2	.01
		1971-75	6.26	8.64	24.0	.14
		1976-80	4.23	6.57	24.8	.50
FSM	1973	1959-63	6.90	7.47	20.7	.38
		1964-68	7.27	8.29	21.0	.17
		1969-73	7.34	8.73	21.4	.12
	1980	1966-70	7.06	8.16	21.2	.12
		1971-75	7.10	8.56	21.5	.07
		1976-80	6.50	8.11	21.9	.10
Ponape & Kosrae	1973	1959-63	7.47	8.27	20.8	.31
		1964-68	7.78	9.09	21.2	.10
		1969-73	7.74	9.32	21.7	.15
	1980	1966-70	7.58	9.04	21.4	.22
		1971-75	7.40	8.98	21.9	.14
		1976-80	6.74	8.45	22.4	.19
Truk	1973	1959-63	6.78	7.15	20.8	.34
		1964-68	7.16	7.95	21.0	.22
		1969-73	7.40	8.67	21.2	.09
	1980	1966-70	7.28	8.24	21.1	.11
		1971-75	7.17	8.55	21.3	.01
		1976-80	6.68	8.28	21.5	-.02
Yap	1973	1959-63	5.89	6.87	20.4	.88
		1964-68	6.23	7.42	20.7	.28
		1969-73	6.01	7.32	21.0	.16
	1980	1966-70	6.14	7.19	20.8	.19
		1971-75	5.98	7.40	21.2	.10
		1976-80	5.01	6.31	21.5	.40
Polynesia						
Niue[c]	1976	1967-71	7.53	(11.52)	(24.7)	(1.10)
		1972-76	5.26	(8.34)	(24.9)	(1.24)
American Samoa	1974	1960-64	6.49	8.44	23.2	.23
		1965-69	6.48	8.45	23.2	.18
		1970-74	5.46	7.28	23.2	.21

Table 4. *(continued)*

Island group	Census[a] year	Period of estimate[b]	TFR	MTFR	SMAM	*m*
	1980	1966–70	6.21	8.03	23.2	.20
		1971–75	5.12	6.86	23.2	.30
		1976–80	4.67	6.47	23.8	.44
Western Samoa	1961	1947–51	8.08	10.96	22.9	−.22
		1952–56	8.36	10.93	22.4	−.21
		1957–61	8.30	10.49	21.8	−.19
	1966	1952–56	8.15	10.66	22.3	.18
		1957–61	8.73	10.92	21.8	.15
		1962–66	8.14	10.25	20.9	.07
	1971	1957–61	8.59	10.70	21.8	.27
		1962–66	8.46	10.57	20.9	.10
		1967–71	7.78	9.60	21.1	.17
Tonga	1966	1952–56	6.49	10.40	25.2	.30
		1957–61	6.61	9.92	24.7	.21
		1962–66	7.16	10.00	24.2	−.04
	1976	1962–66	6.16	8.70	24.2	.17
		1967–71	6.15	8.65	24.0	.28
		1972–76	4.66	6.81	24.2	.39
Tuvalu	1979	1965–69	4.99	7.40	23.4	.45
		1970–74	3.31	5.38	24.0	.80
		1975–79	2.80	4.97	24.9	1.05

a. The census to which the own-children method was applied.

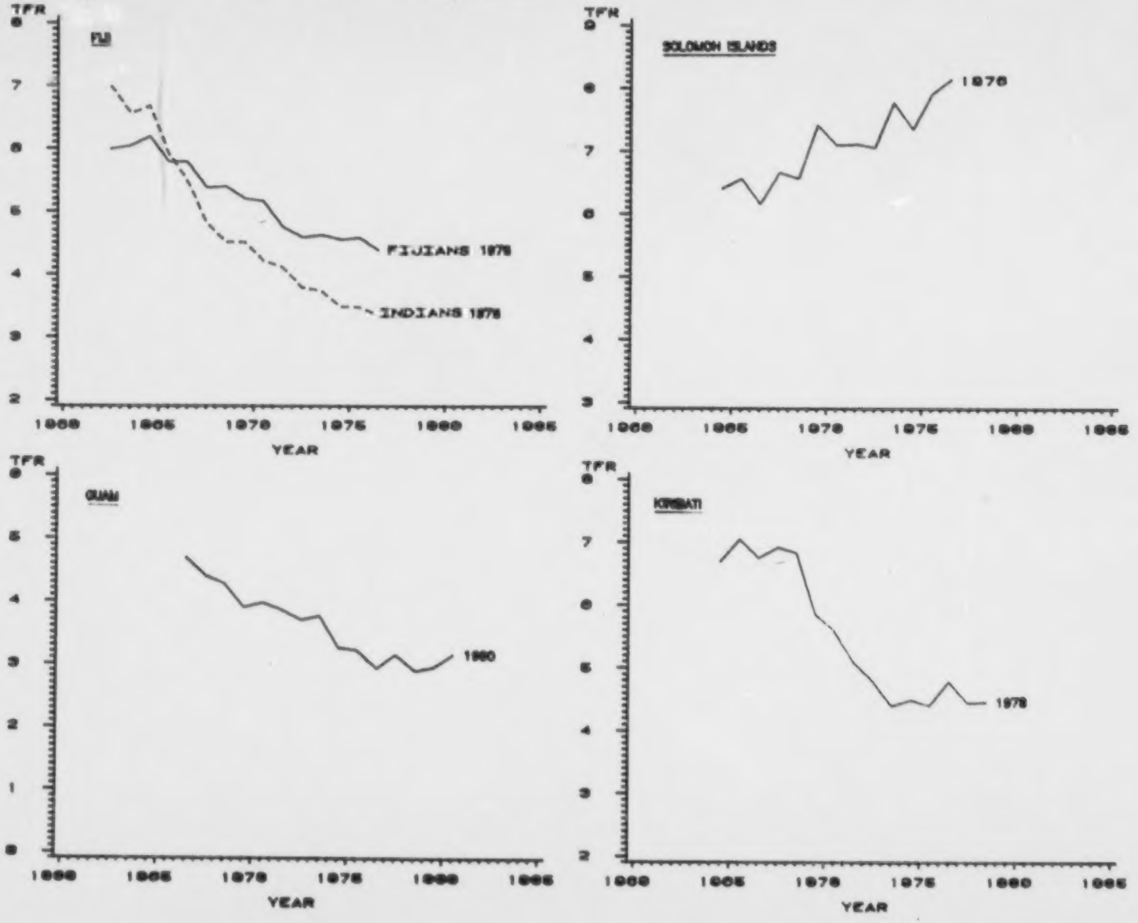
b. Indicates the time period to which the fertility estimates pertain.

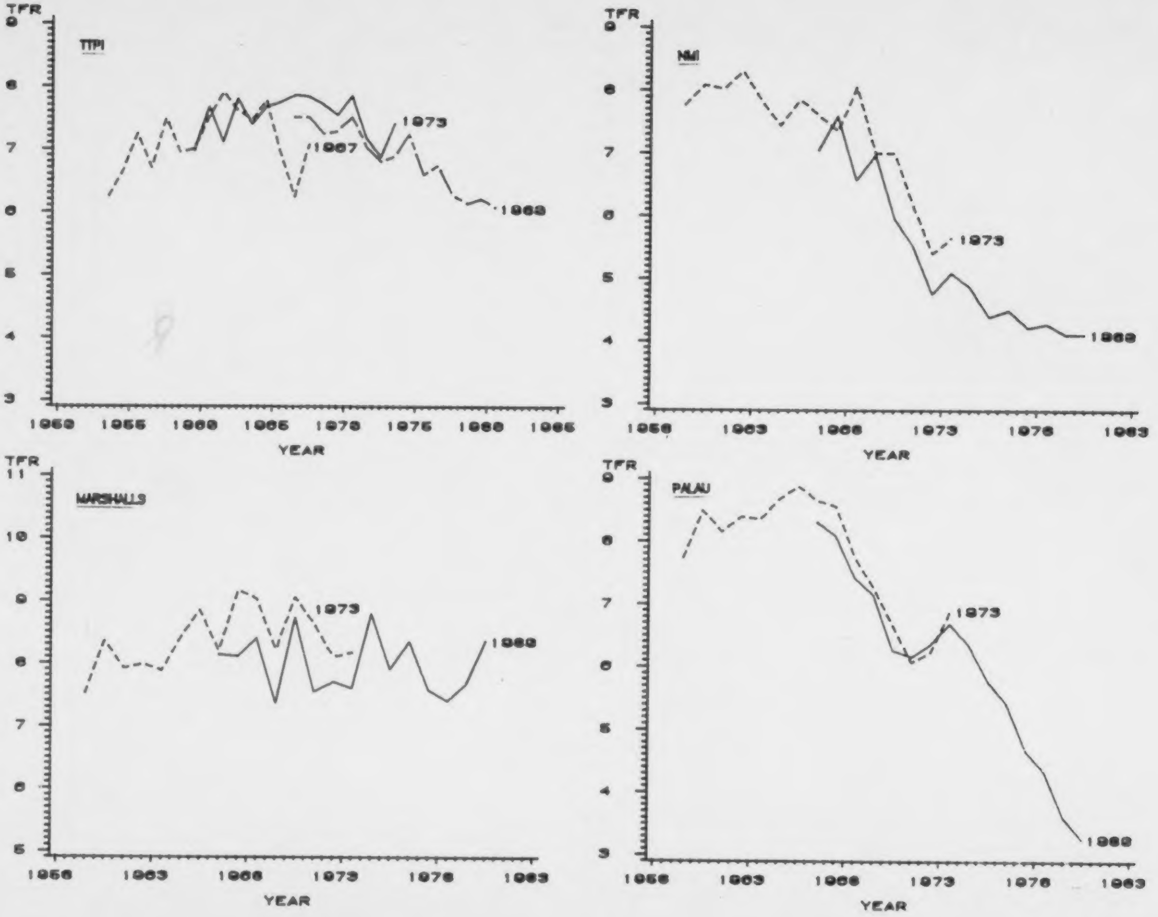
c. Numbers in parentheses are probably severely biased, as explained in the text.

During the estimation period, age at first marriage remained virtually unchanged for Fijians at slightly above 22 years, but rose substantially for Indians—from about 18 years in 1956 to 21 years in 1976. Age-specific birth rates and age-specific marital birth rates fell at all ages for both Fijians and Indians, indicating that birth control was being adopted for spacing as well as for limiting purposes. This is perhaps to be expected (at least for Fijians), since conscious birth spacing is a traditional practice that predates fertility transition in many Pacific populations (Nag 1962). The *m* index of fertility control increased substantially for both Fijians and Indians, especially the latter. The *m* index rose rapidly after 1960 for Indians and after 1970 or so for Fijians. The fact that Fijian marital fertility nevertheless started falling well before 1970 suggests that Fijians initially adopted birth control as much for spacing as for limiting births. Fiji has had an active family planning

(Continued on page 44)

Figure 2. Annual total fertility rates




TFR
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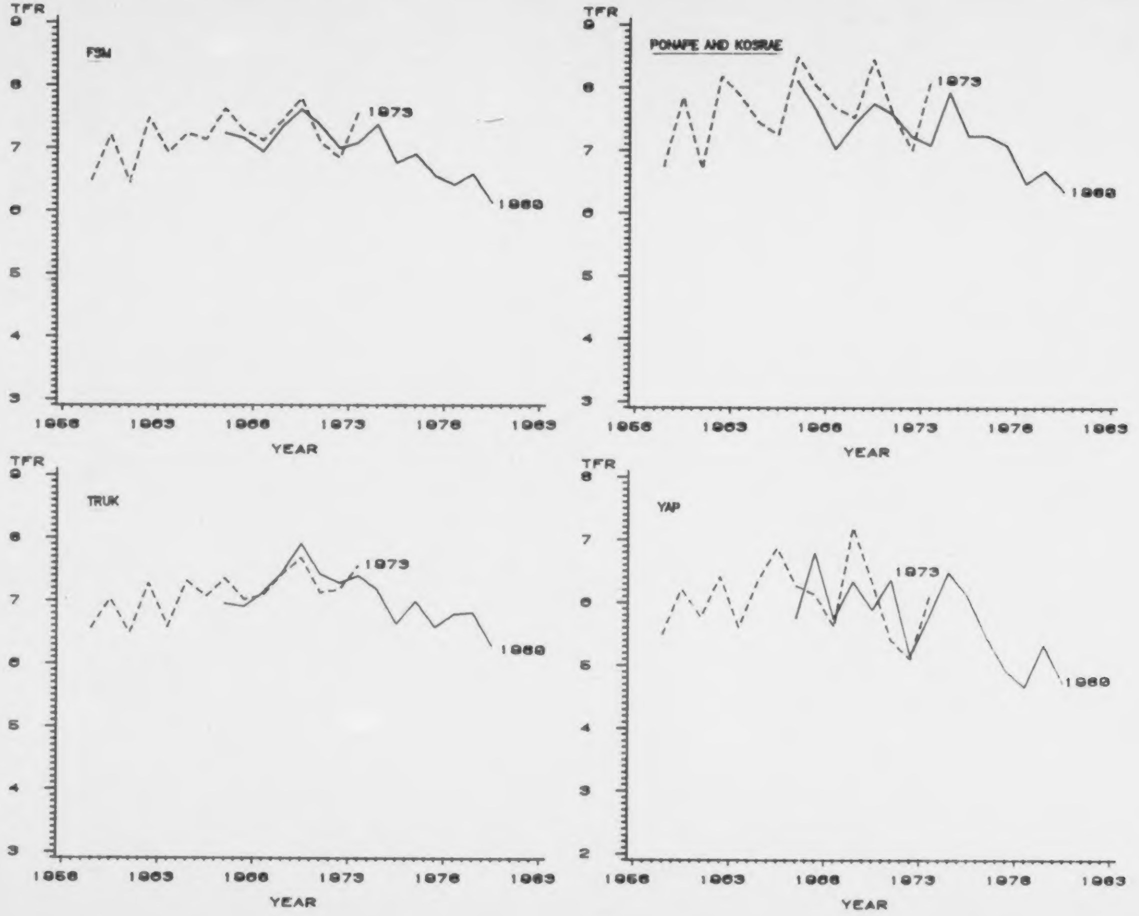
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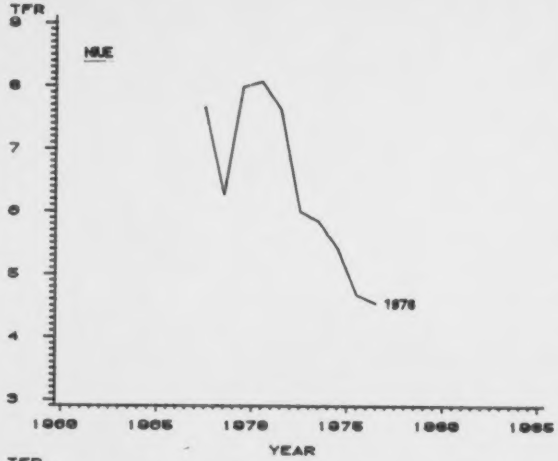
5
4
3
2
1958
1963
1968
1973
1978
1983
YEAR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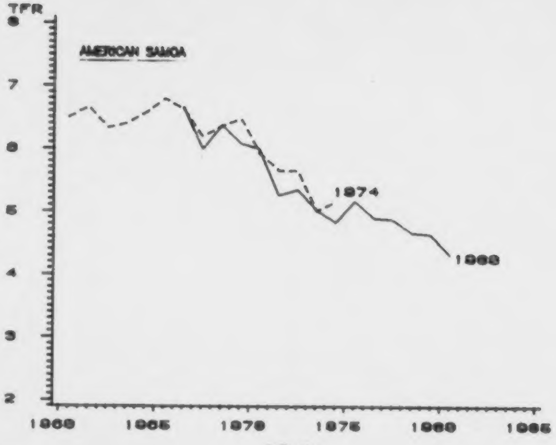
NIUE
9
8
7
6
5
4
3
1976
1960
1965
1970
1975
1980
1985
YEAR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1960
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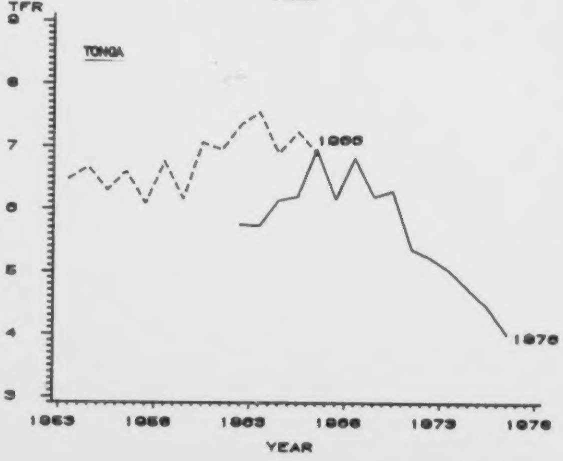
1985
YEAR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TONGA
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8
7
6
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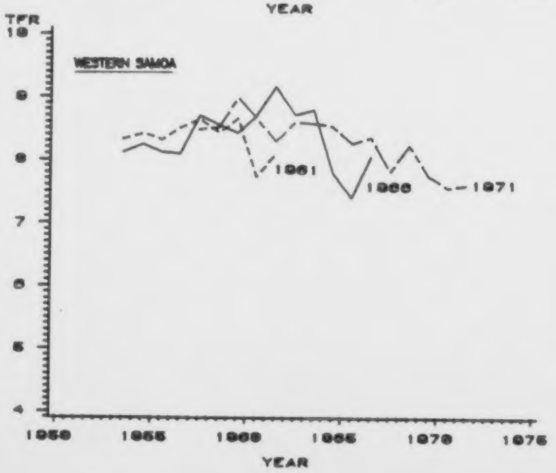
4
3
1966
1976
1953
1958
1963
1968
1973
1978
YEAR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WESTERN SAMOA
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9
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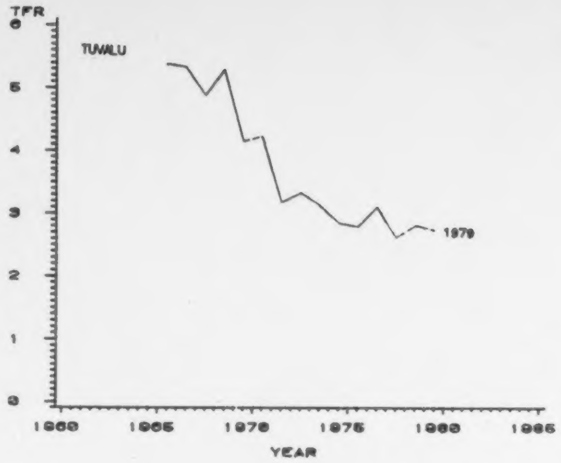
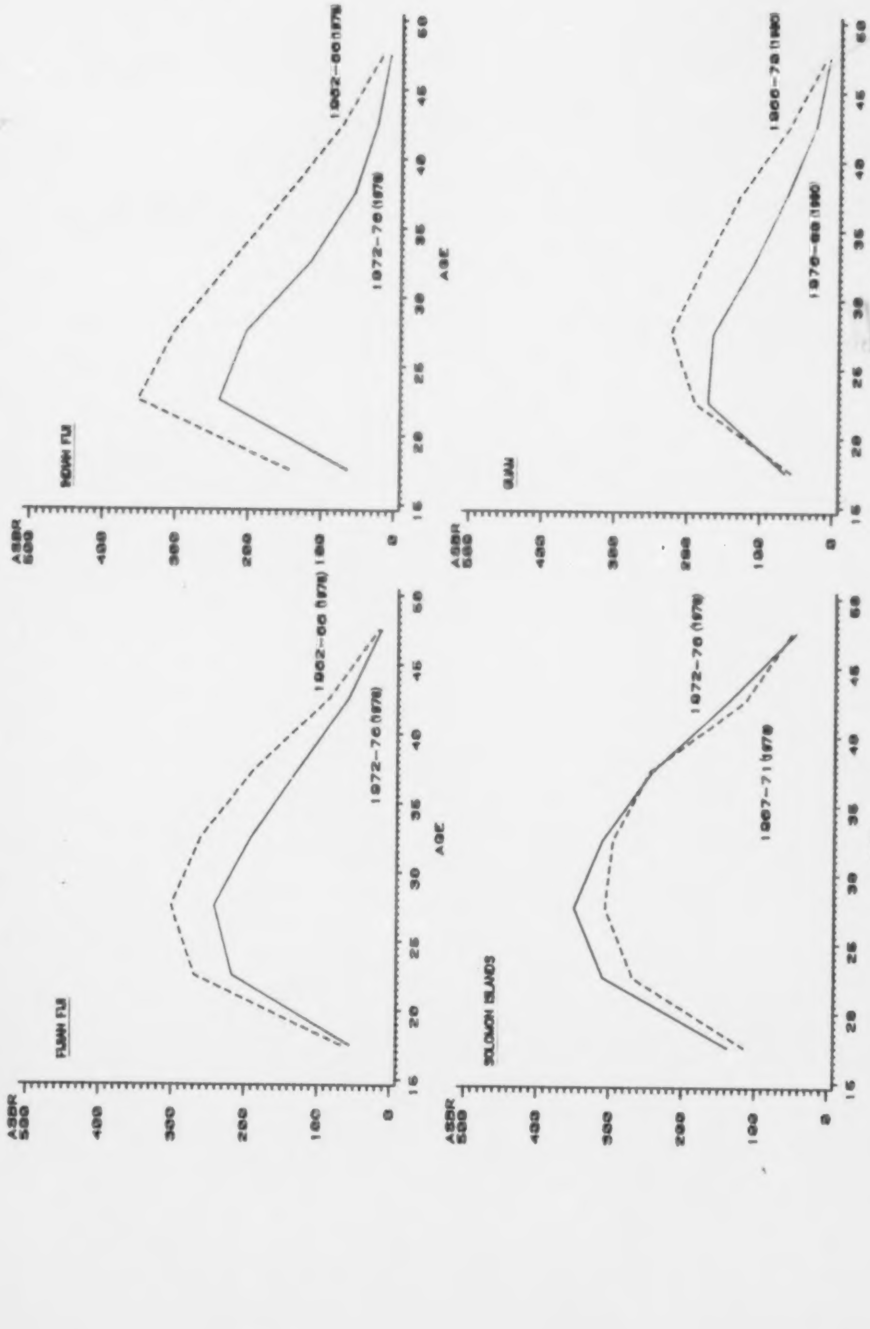
6
5
4
1961
1966
1971
1950
1955
1960
1965
1970
1975
YEAR

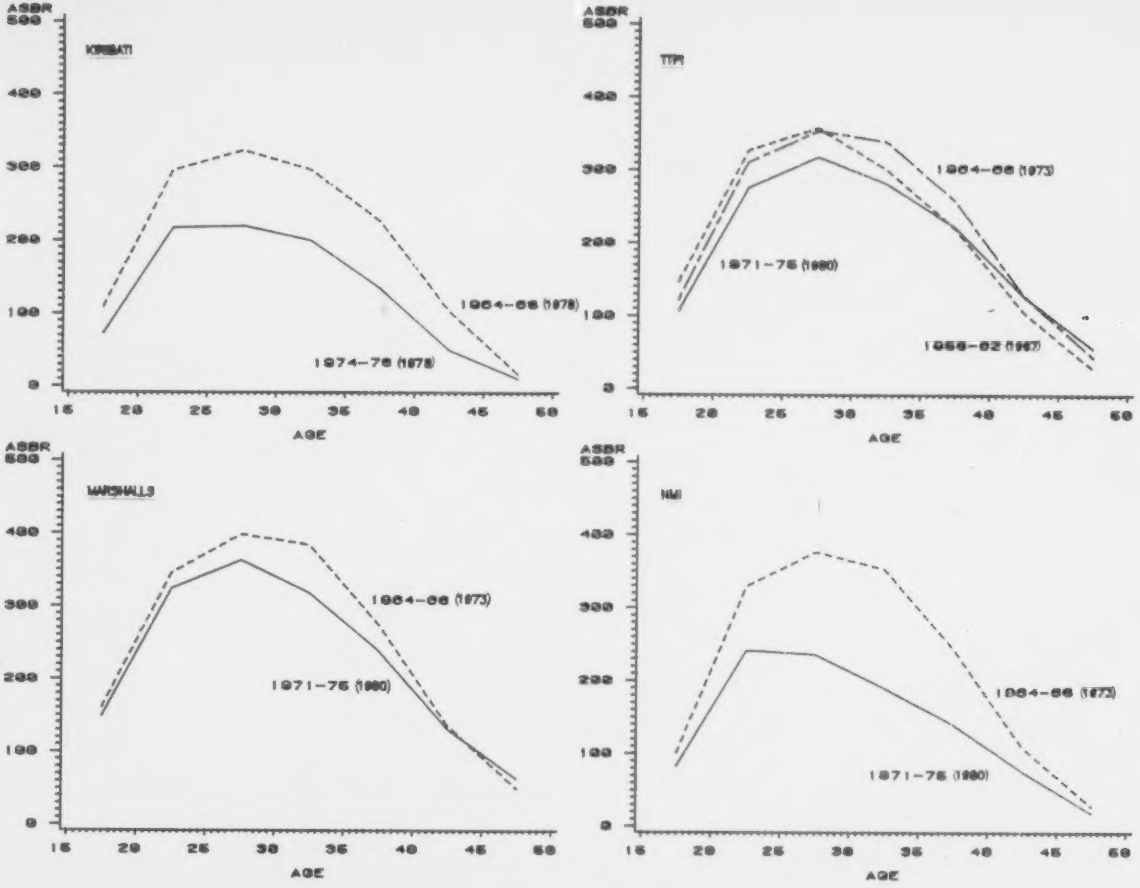


Source: Unpublished tabulations.

Note: Each census provides fifteen years of annual estimates based on own-children tabulations. The census year corresponding to each trend line is indicated on the graphs. Two or more censuses provide two or more partially overlapping time series of estimates.

Figure 3. Age-specific birth rates

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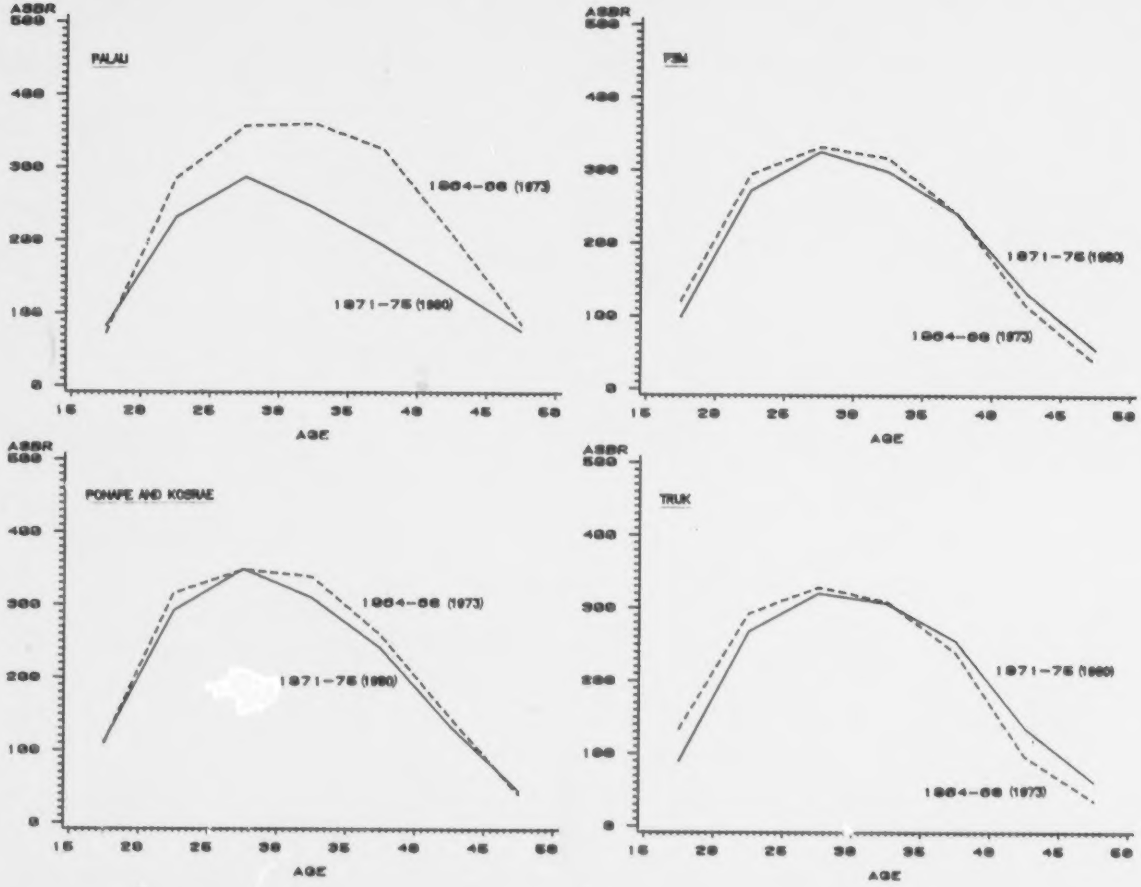
300
200
100
0
KIRIBATI
1964-68 (1978)
1974-78 (1978)
15
20
25
30
35
40
45
50
AGE
TTPI
1964-68 (1973)
1971-75 (1980)
1958-62 (1967)
MARSHALLS
1964-68 (1973)
1971-75 (1980)
NMI
1964-68 (1973)
1971-75 (1980)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100
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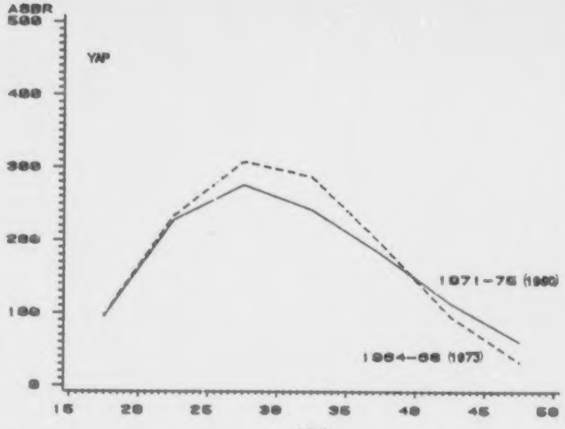
PALAU
1964-68 (1973)
1971-75 (1980)
15
20
25
30
35
40
45
50
AGE
ASBR
500
400
300
200
100
0
FSM
1971-75 (1980)
1964-68 (1973)
15
20
25
30
35
40
45
50
AGE
ASBR
500
400
300
200
100
0
PONAPE AND KOSRAE
1964-68 (1973)
1971-75 (1980)
15
20
25
30
35
40
45
50
AGE
ASBR
500
400
300
200
100
0
TRUK
1971-75 (1980)
1964-68 (1973)
15
20
25
30
35
40
45
50
AGE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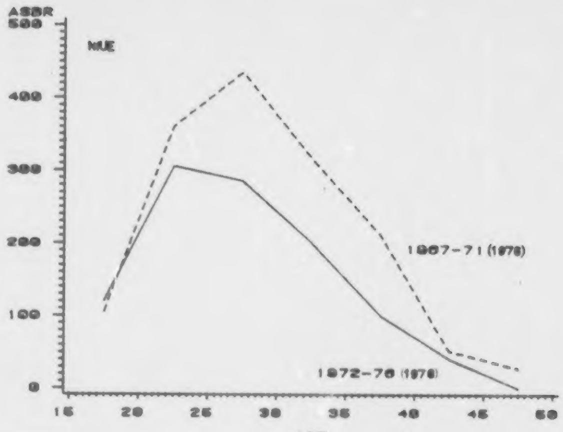
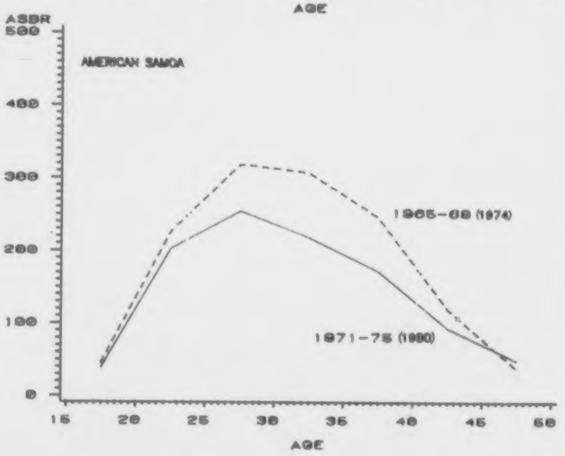
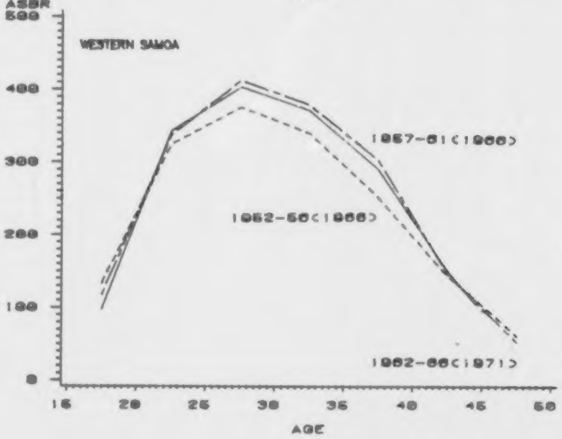
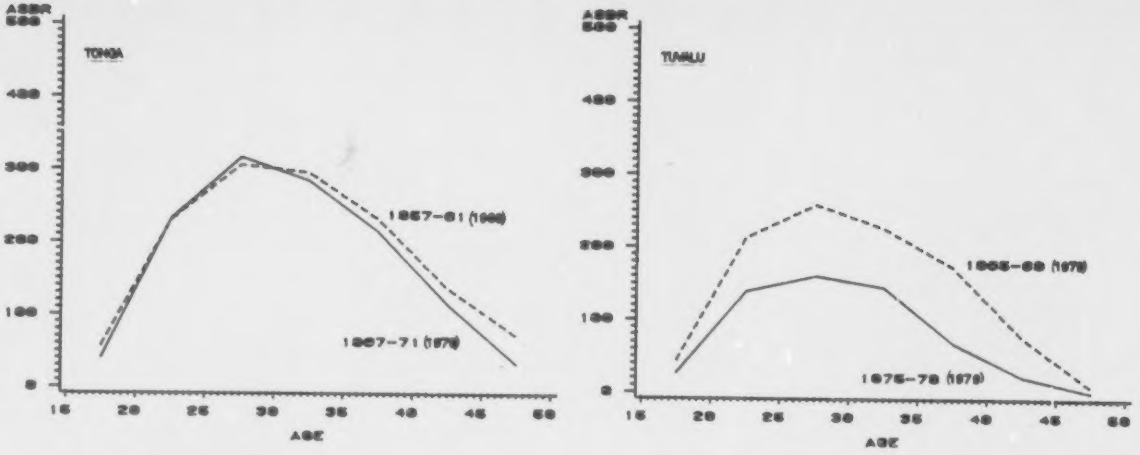
100
0
YAP
1971-75 (1980)
1964-68 (1973)
15
20
25
30
35
40
45
50
AGE


ASBR
500
400
300
200
100
0
NIUE
1967-71 (1976)
1972-76 (1976)
15
20
25
30
35
40
45
50
AGE


ASBR
500
400
300
200
100
0
AMERICAN SAMOA
1965-69 (1974)
1971-75 (1980)
15
20
25
30
35
40
45
50
AGE

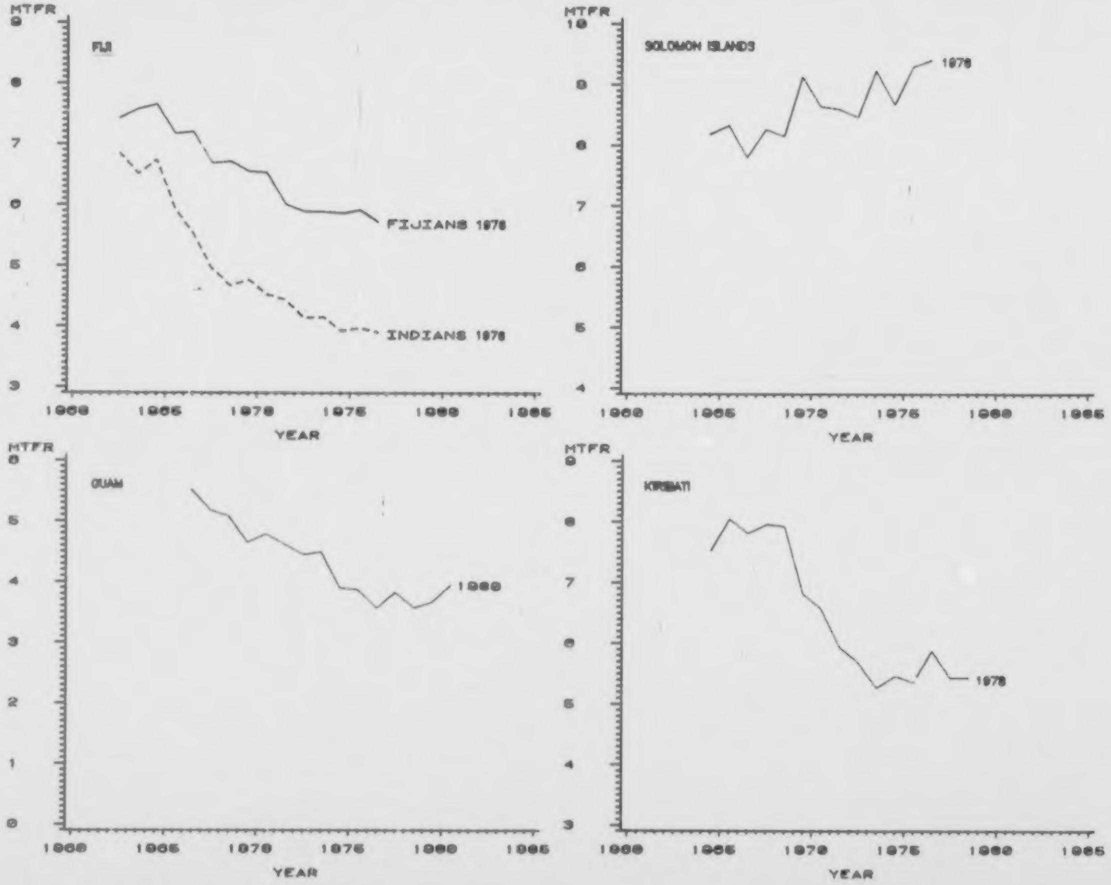

ASBR
500
400
300
200
100
0
WESTERN SAMOA
1957-61(1966)
1952-56(1966)
1962-66(1971)
15
20
25
30
35
40
45
50
AGE

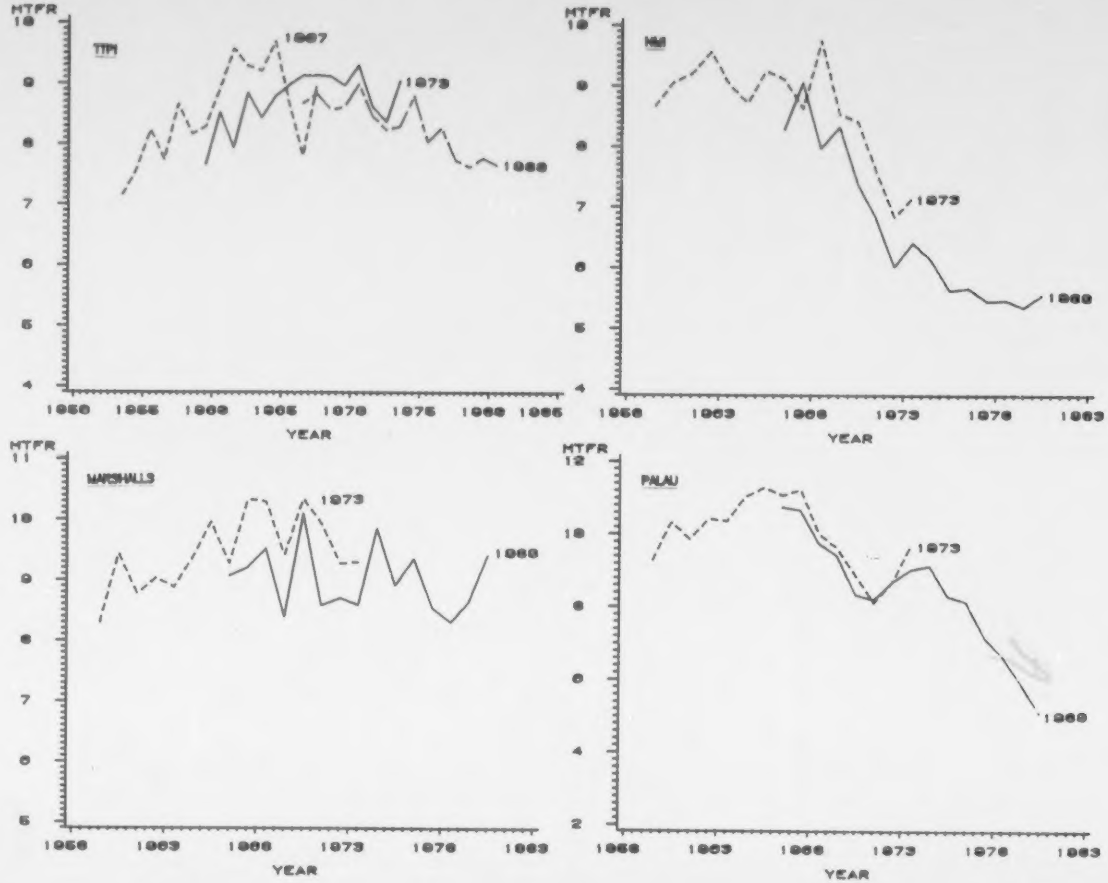


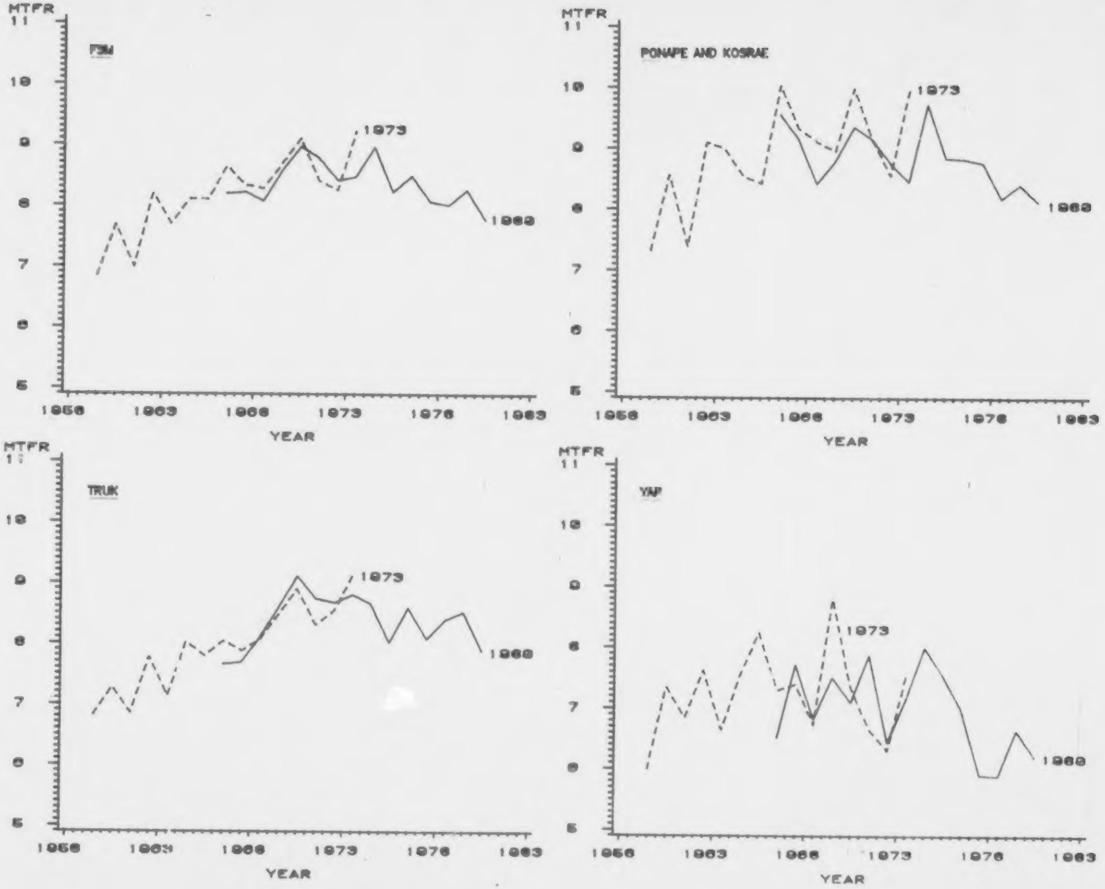
Source: Appendix Table 1.

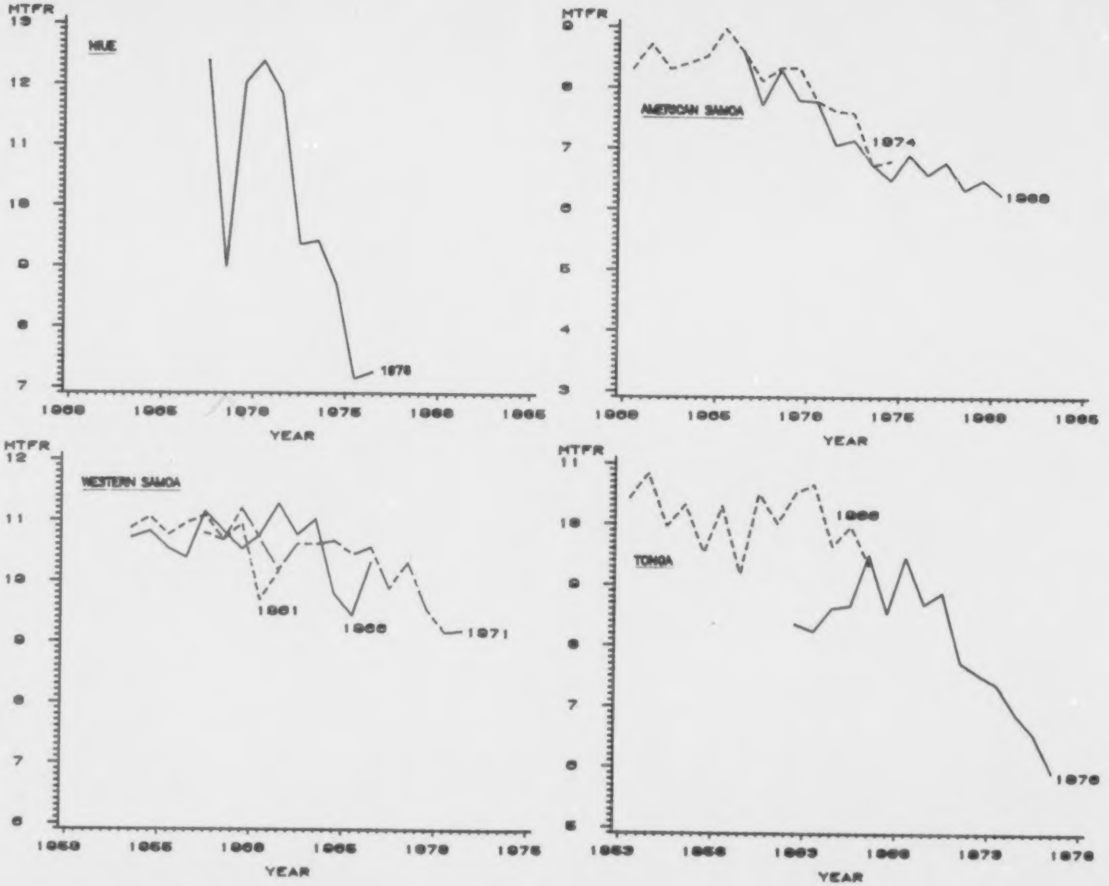
Note: In this and subsequent figures, years in parentheses indicate the census on which own-children fertility estimates are based.

Figure 4. Annual marital total fertility rates




MTFR
TTPI
10
9
8
7
6
5
4
1967
1973
1980
1950
1955
1960
1965
1970
1975
1980
1985
YEAR
MTFR
NMI
10
9
8
7
6
5
4
1973
1980
1958
1963
1968
1973
1978
1983
YEAR
MTFR
MARSHALLS
11
10
9
8
7
6
5
1973
1980
1958
1963
1968
1973
1978
1983
YEAR
MTFR
PALAU
12
10
8
6
4
2
1973
1980
1958
1963
1968
1973
1978
1983
YEAR


MTFR
11
10
9
8
7
6
5
1958
1963
1968
1973
1978
1983
YEAR
FSM
PONAPE AND KOSRAE
TRUK
YAP
1973
1980


NIUE
MTFR
13
12
11
10
9
8
7
1976
1960
1965
1970
1975
1980
1985
YEAR
AMERICAN SAMOA
MTFR
9
8
7
6
5
4
3
1974
1980
1960
1965
1970
1975
1980
1985
YEAR
WESTERN SAMOA
MTFR
12
11
10
9
8
7
6
1961
1966
1971
1950
1955
1960
1965
1970
1975
YEAR
TONGA
MTFR
11
10
9
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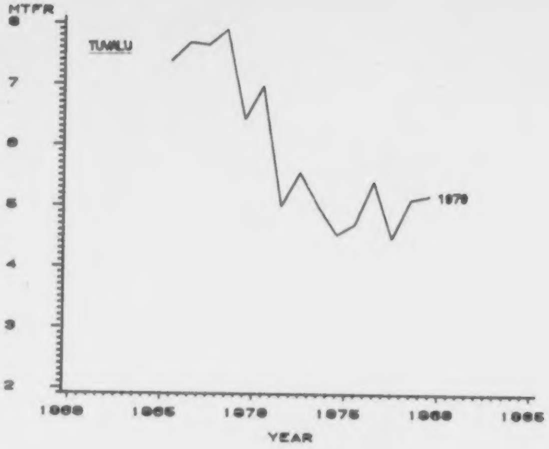
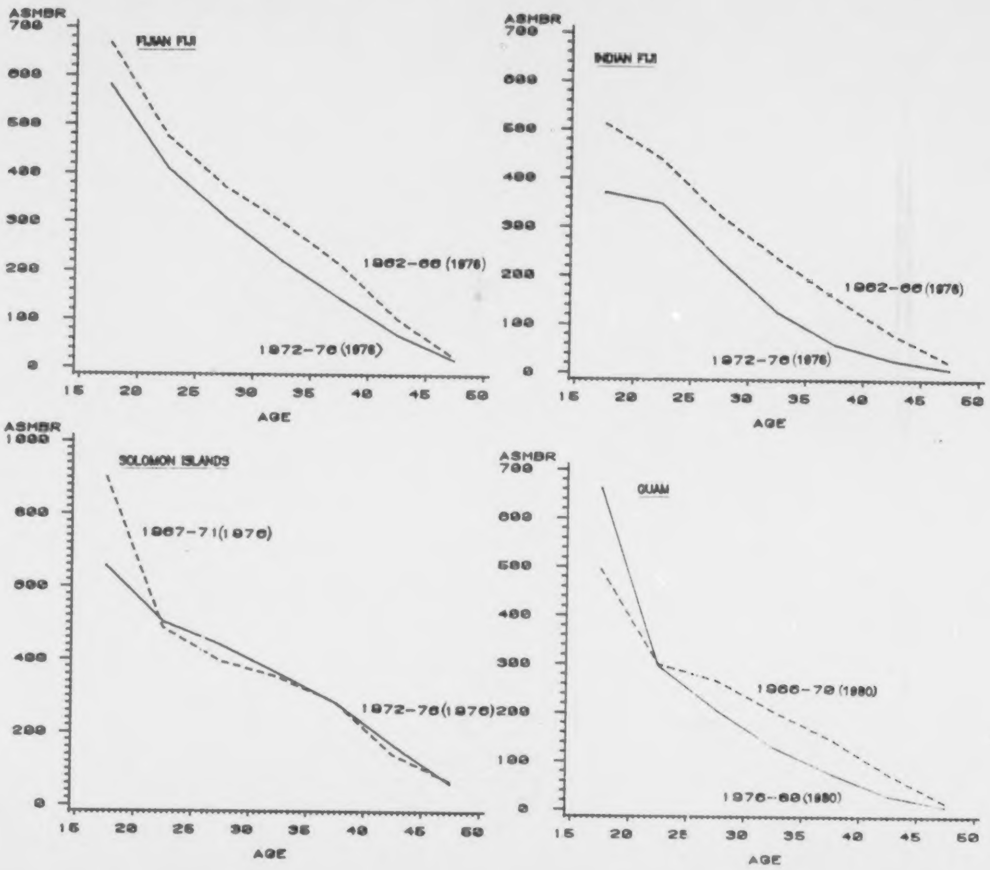
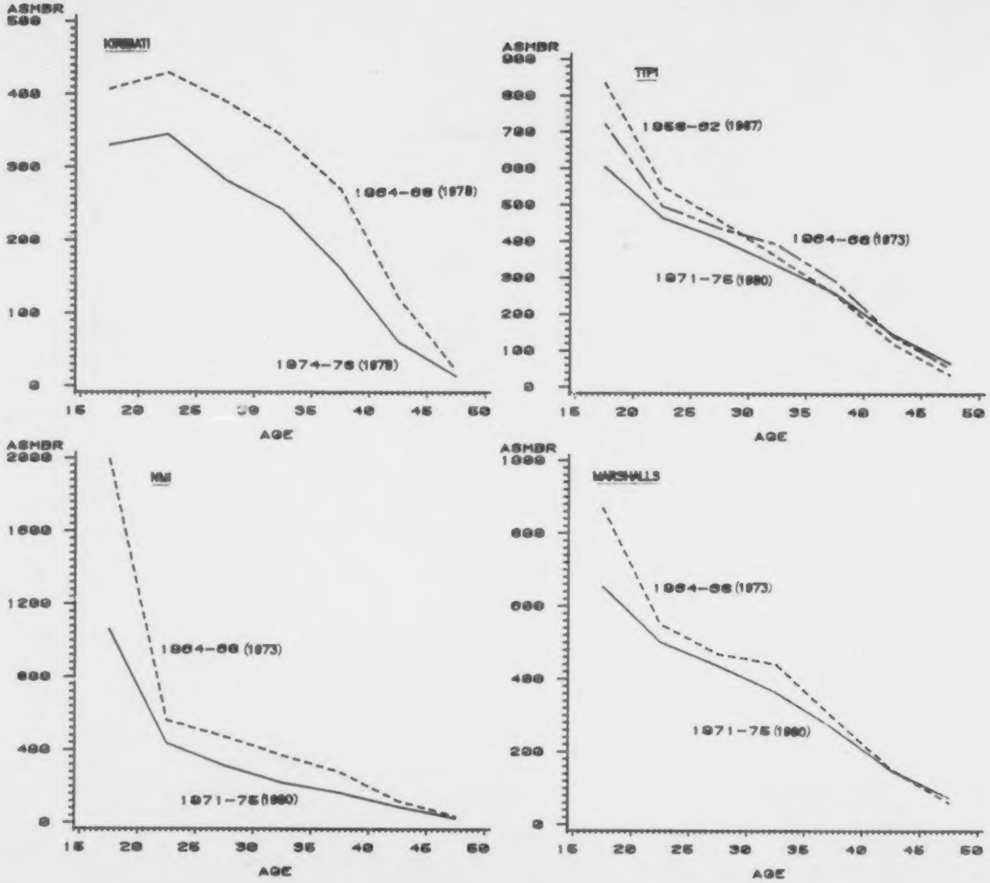
7
6
5
1966
1976
1953
1958
1963
1968
1973
1978
YEAR



Source: Unpublished tabulations.

Figure 5. Age-specific marital birth rates




ASMBR
KIRIBATI
1964-68 (1978)
1974-78 (1978)
0
100
200
300
400
500
15
20
25
30
35
40
45
50
AGE
ASMBR
TTPI
1958-62 (1967)
1964-68 (1973)
1971-75 (1980)
0
100
200
300
400
500
600
700
800
900
15
20
25
30
35
40
45
50
AGE
ASMBR
NMI
1964-68 (1973)
1971-75 (1980)
0
400
800
1200
1600
2000
15
20
25
30
35
40
45
50
AGE
ASMBR
MARSHALLS
1964-68 (1973)
1971-75 (1980)
0
200
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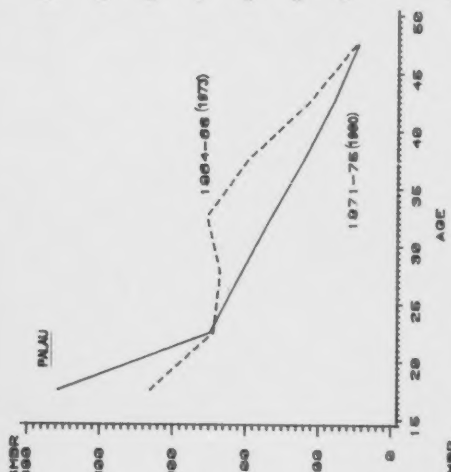
600
800
1000
15
20
25
30
35
40
45
50
AGE


PALAU
ASMBR
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800
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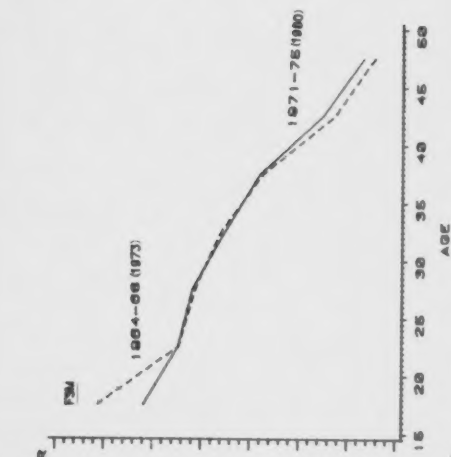
400
200
0
15
20
25
30
35
40
45
50
AGE
1964-68 (1973)
1971-75 (1980)


FSM
ASMBR
700
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300
200
100
0
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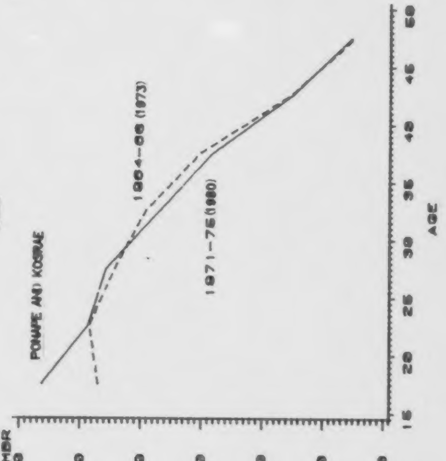
20
25
30
35
40
45
50
AGE
1964-68 (1973)
1971-75 (1980)


PONAPE AND KOSRAE
ASMBR
600
500
400
300
200
100
0
15
20
25
30
35
40
45
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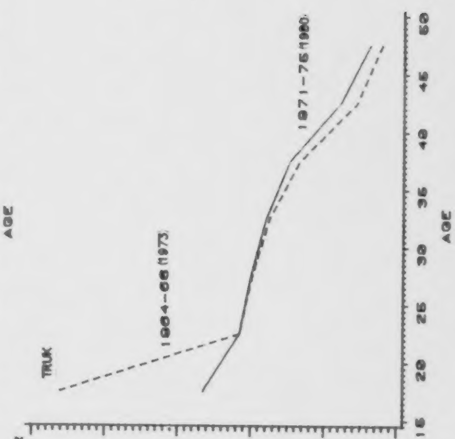
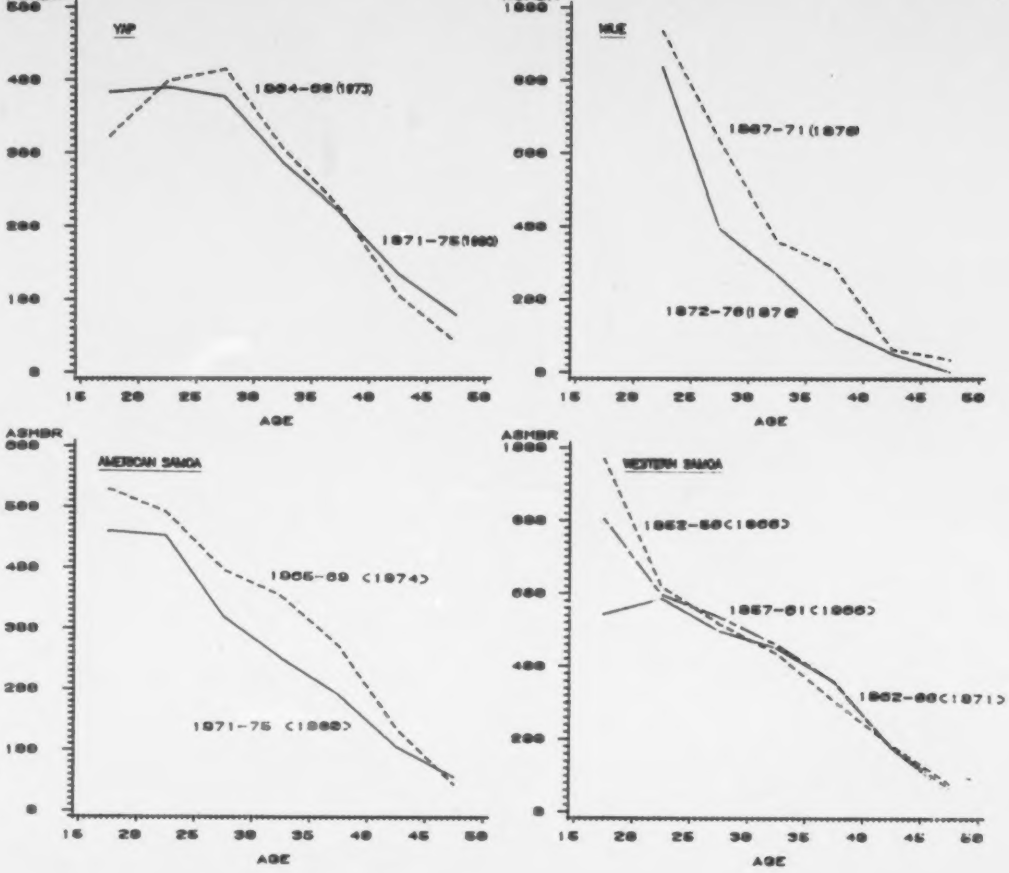
AGE
1964-68 (1973)
1971-75 (1980)


TRUK
ASMBR
1000
800
600
400
200
0
15
20
25
30
35
40
45
50
AGE
1964-68 (1973)
1971-75 (1980)


ASMBR
500
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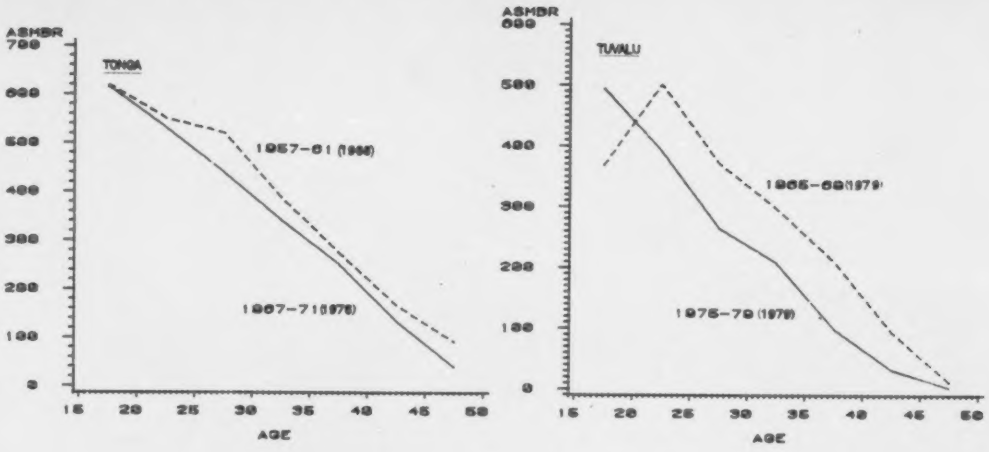
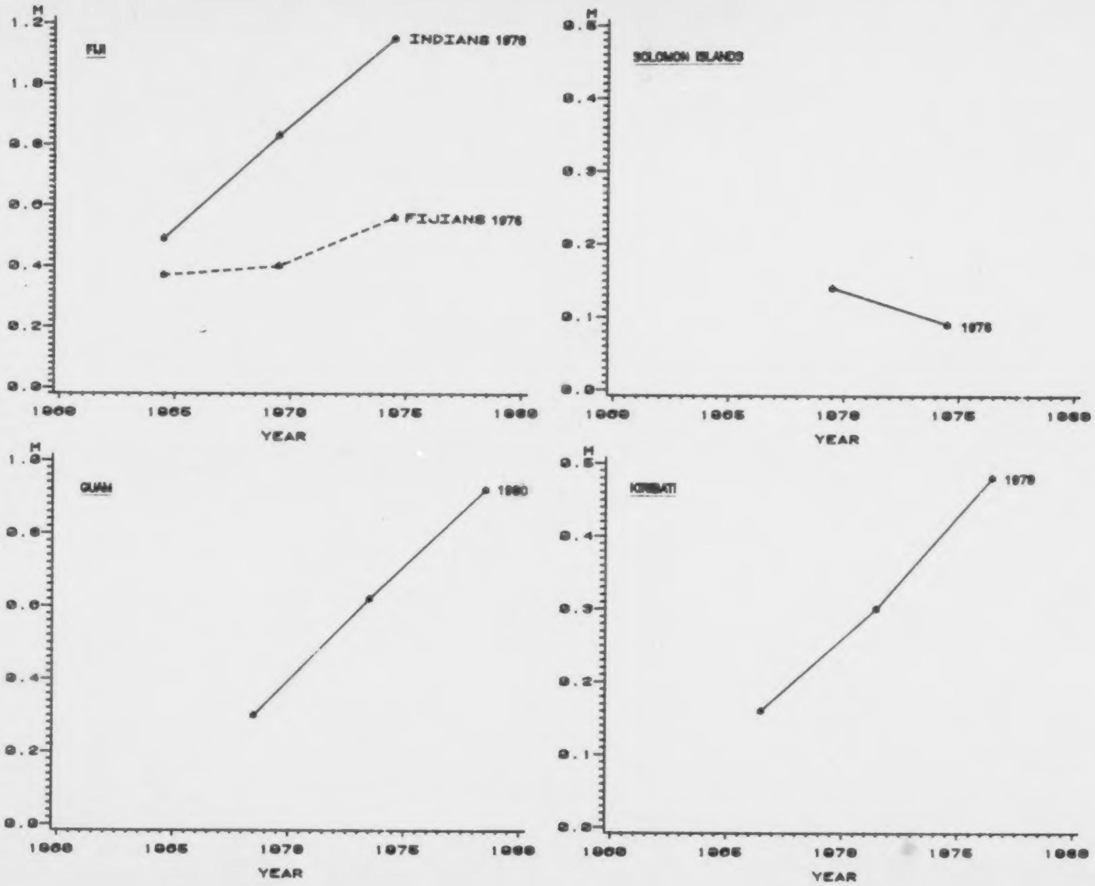
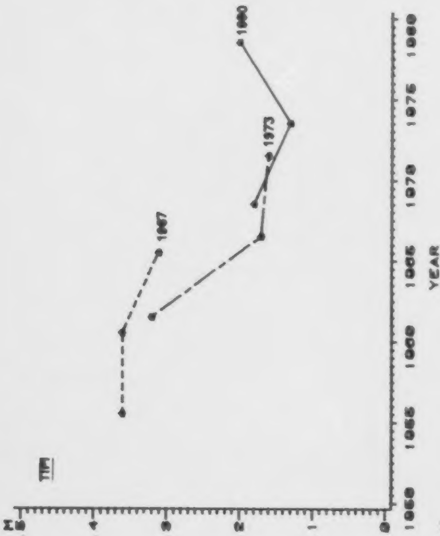
200
100
0
YAP
1964-68(1973)
1971-75(1980)
15 20 25 30 35 40 45 50
AGE
ASMBR
1000
800
600
400
200
0
NIUE
1967-71(1976
1972-76(1979
15 20 25 30 35 40 45 50
AGE
ASMBR
600
500
400
300
200
100
0
AMERICAN SAMOA
1965-69 (1974)
1971-75 (1980)
15 20 25 30 35 40 45 50
AGE
ASMBR
1000
800
600
400
200
0
WESTERN SAMOA
1952-56(1966)
1957-61(1966)
1962-66(1971)
15 20 25 30 35 40 45 50
AGE



Source: Appendix Table 2.

Figure 6. Trends in the *m* index of marital fertility control




TTPI
M
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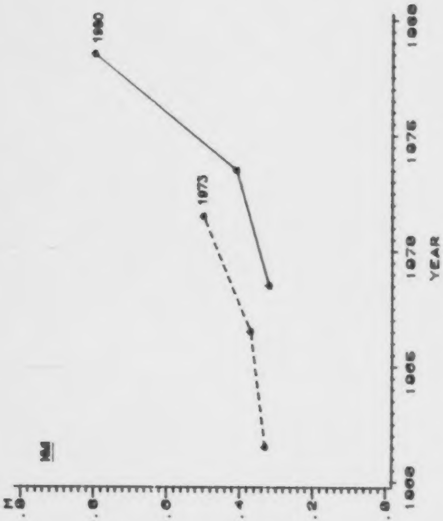
0.4
0.3
0.2
0.1
0.0
1950
1955
1960
1965
1970
1975
1980
YEAR
1967
1973
1980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0.6
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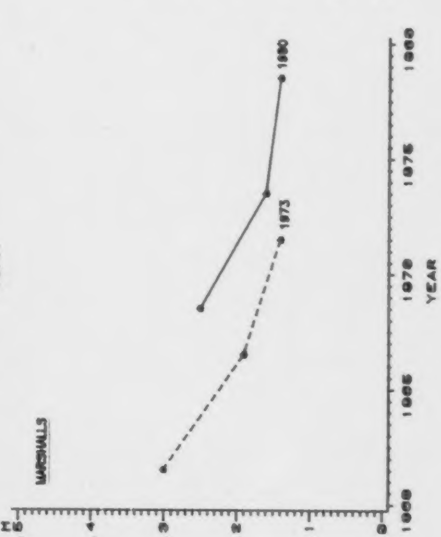
0.2
0.0
1960
1965
1970
1975
1980
YEAR
1973
1980


MARSHALLS
M
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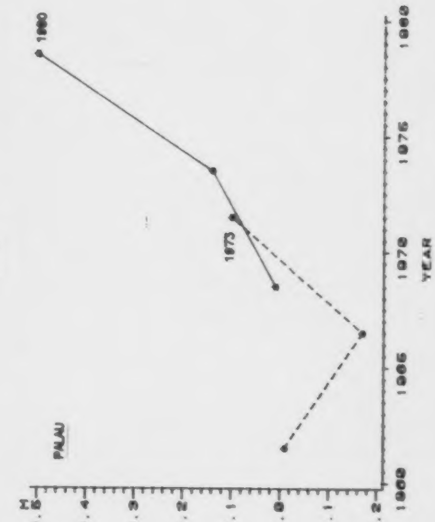
0.4
0.3
0.2
0.1
0.0
1960
1965
1970
1975
1980
YEAR
1973
1980


PALAU
M
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0.1
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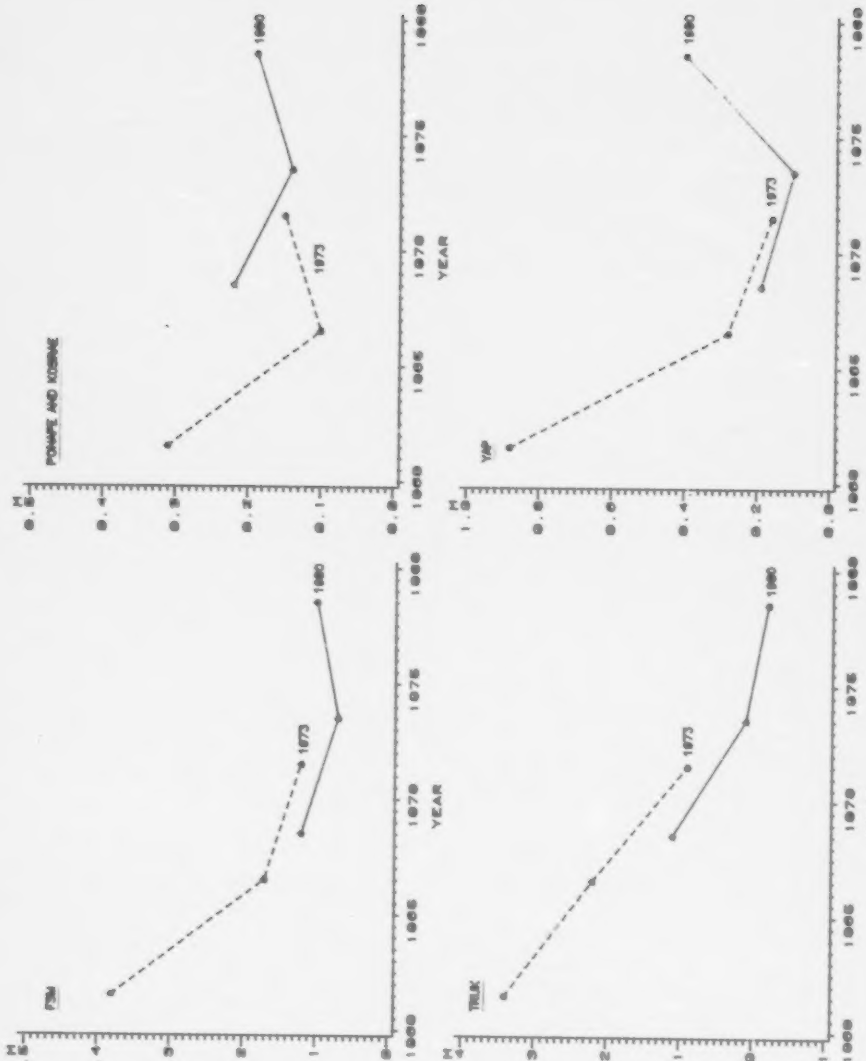
-0.1
-0.2
1960
1965
1970
1975
1980
YEAR
1973
1980


FSM
M
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0.1
0.0
1973
1980
1960
1965
1970
1975
1980
YEAR
PONAPE AND KOSRAE
M
0.5
0.4
0.3
0.2
0.1
0.0
1973
1980
1960
1965
1970
1975
1980
YEAR
TRUK
M
0.4
0.3
0.2
0.1
0.0
-0.1
1973
1980
1960
1965
1970
1975
1980
YEAR
YAP
M
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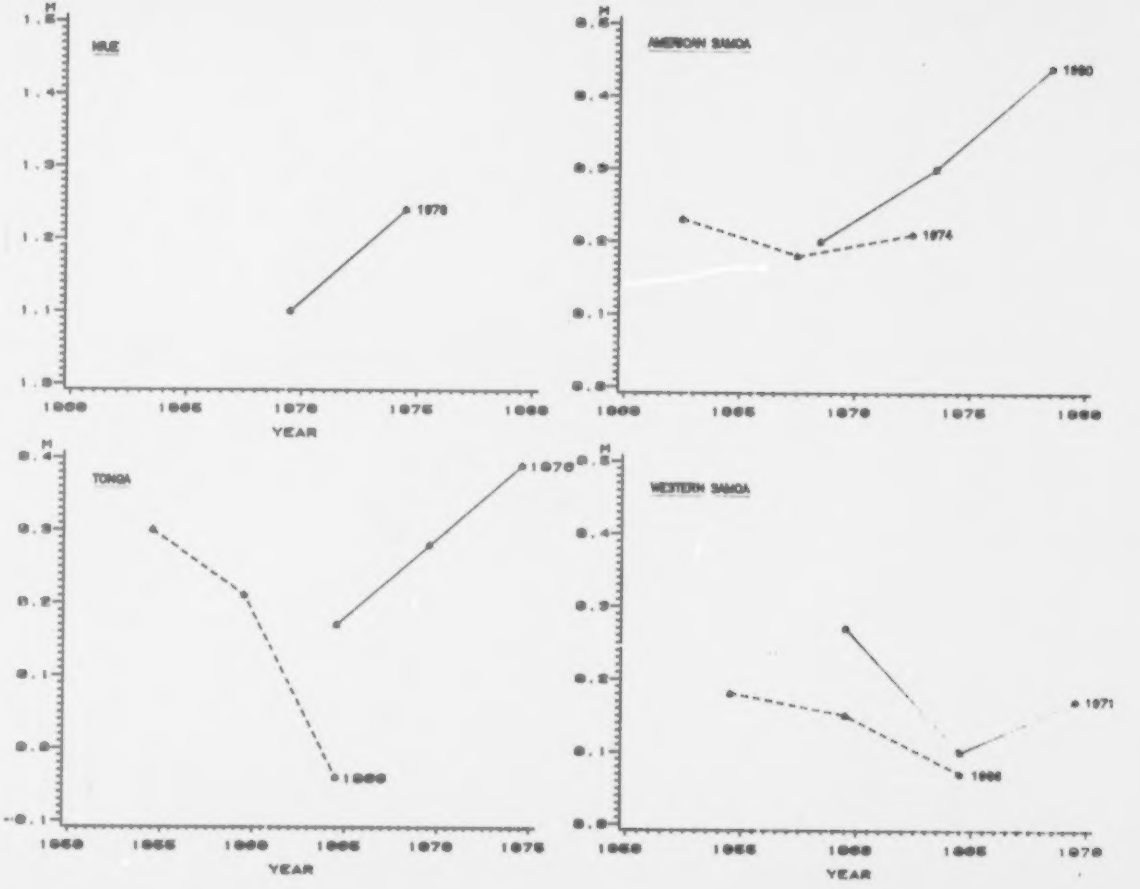
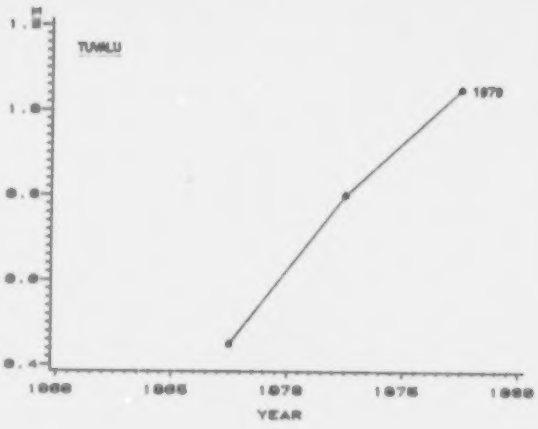
0.2
0.0
1973
1980
1960
1965
1970
1975
1980
YEAR


M
1.5
1.4
1.3
1.2
1.1
1.0
NIUE
1976
1960
1965
1970
1975
1980
YEAR
M
0.5
0.4
0.3
0.2
0.1
0.0
AMERICAN SAMOA
1980
1974
1960
1965
1970
1975
1980
M
0.4
0.3
0.2
0.1
0.0
-0.1
TONGA
1976
1966
1950
1955
1960
1965
1970
1975
YEAR
M
0.5
0.4
0.3
0.2
0.1
0.0
WESTERN SAMOA
1971
1966
1950
1955
1960
1965
1970
YEAR



Source: Table 4.

program since 1962, established at about the same time that marital fertility began its rapid decline (Lucas and Ware 1981; throughout this paper, statements about family planning programs are based on information from this source).

Table 5 shows that the own-children fertility estimates are on the whole about 6–8 percent higher than estimates derived from maternity histories in the 1974 World Fertility Survey in Fiji, and usually about 15–20 percent higher than comparable estimates based on vital registration. Differences tend to be greater at the early and late reproductive ages than at the middle reproductive ages. These comparisons suggest that births are somewhat underregistered, more so at the extreme than at the peak reproductive ages. Underregistration appears greater for Fijians than for Indians. Annual fluctuations in the OC/VR ratios suggest that the ratio for any given year should be viewed as approximate, as should ratios for the other island groups considered here.

Solomon Islands

Solomon Islands differs markedly from Fiji in its level of economic, social, and demographic development. The two island groups together illustrate a general proposition that holds not only for Melanesia but also for Micronesia and Polynesia: namely, that for fertility estimation purposes none can be treated as a homogeneous aggregate. There is, in fact, considerable variation both among and within them.

Of the island groups considered in this paper, Solomon Islands is the largest in land area and lowest in density. As recently as 1976, fertility had not yet begun to decline. The population growth rate is very high, at about 3.3 percent per annum. The reported sex ratio is abnormally high, probably reflecting relative underenumeration of females in the census. Myers's index in 1976 was 3.7, indicating moderately accurate age reporting. Nonown factors are fairly low, consistent with low rates of out-migration and perhaps indicating that adoption is not so prevalent as in some other Pacific societies. Mortality is comparatively high, with life expectancy about 54 years. This is one of the lowest life expectancies in the Pacific.

Fertility in Solomon Islands increased substantially over the estimation period of 1964–76. The TFR increased by approximately 1.5 children, from about 6.5 to 8. At the same time, mean age at first marriage fell. Age-specific birth rates increased mainly at the younger ages, indicating that falling age at marriage accounts for most of the TFR increase. But marital fertility also rose slightly, perhaps owing to shorter breastfeeding, although we have no direct evidence on this. The substantial decline of age-specific marital fertility at 15–19 in Figure 5 is probably a spurious finding (which, as we shall see, emerges also for several of the other island groups we shall con-

Table 5. Ratios of fertility estimates derived by the own-children (OC) method to fertility estimates based on alternative sources (AS)

				OC/AS ratios							
					ASBRs						
Island group	Year of estimates	TFR (OC)	TFR (AS)	TFR	15–19	20–24	25–29	30–34	35–39	40–44	45–49
Melanesia											
Fiji											
Fijians	1967	5.37	5.18	1.04	1.07	0.99	1.11	1.12	0.94	0.77	u
	1971	4.74	3.84	1.23	1.20	0.96	1.17	1.40	1.43	1.78	u
(AS = WFS)	1971–73	4.71	4.46	1.06	0.90	1.01	1.10	0.97	1.09	1.20	u
(AS = VR)	1971–73	4.71	3.64	1.30	0.75	1.03	1.26	1.40	1.42	1.91	u
Indians	1967	4.81	3.99	1.21	1.20	1.14	1.13	1.24	1.16	1.79	u
	1971	4.10	3.60	1.14	1.38	1.08	1.10	1.13	1.07	1.41	u
(AS = WFS)	1971–73	3.82	3.54	1.08	0.99	1.01	1.07	1.15	1.23	1.17	u
(AS = VR)	1971–73	3.82	3.33	1.15	1.42	1.11	1.09	1.08	1.12	1.47	u
Solomon Islands	1970	7.10	5.62	1.26	2.61	1.32	1.22	1.20	1.17	1.02	1.24
Micronesia											
Guam	1980	3.16	3.24	0.98	0.91	0.96	0.98	0.92	1.11	0.96	4.00
Kiribati	1973	4.38	2.73	1.61	1.21	1.36	1.43	1.96	2.33	2.58	1.67
TTPI	1967	7.51	6.86	1.10	1.15	1.02	0.99	1.10	1.13	1.27	3.23
	1973	6.89	5.36	1.28	1.10	0.95	1.24	1.39	1.43	1.68	7.25
NMI	1967	7.60	8.40	0.90	0.80	0.78	0.89	0.78	1.20	1.18	1.15
	1973	5.09	5.14	0.99	0.84	0.87	0.93	0.84	1.38	1.24	16.50

Table 5. *(continued)*

Island group	Year of estimates	TFR (OC)	TFR (AS)	OC/AS ratios							
					ASBRs						
				TFR	15–19	20–24	25–29	30–34	35–39	40–44	45–49
Marshalls	1967	8.10	8.04	1.01	1.16	0.99	0.88	1.06	0.92	1.06	3.29
	1973	7.59	6.22	1.22	1.08	0.88	1.21	1.37	1.54	1.41	6.00
Palau	1967	8.08	6.88	1.17	0.76	0.99	0.86	1.21	1.57	1.25	7.53
	1973	6.69	5.36	1.25	1.03	0.60	1.23	1.33	1.77	2.13	32.00
FSM	1967	7.15	6.12	1.17	1.26	1.13	1.09	1.18	1.10	1.39	2.67
	1973	7.08	5.08	1.39	1.24	1.09	1.33	1.55	1.37	1.80	6.00
Ponape & Kosrae	1967	7.63	6.33	1.21	1.01	1.22	1.18	1.21	1.19	1.21	2.40
	1973	7.08	5.87	1.21	1.18	0.93	1.22	1.48	1.06	1.45	3.20
Truk	1967	6.90	5.94	1.16	1.47	1.10	1.14	1.17	0.94	1.43	3.10
	1973	7.40	4.58	1.61	1.36	1.32	1.41	1.64	1.78	2.11	11.83
Yap	1966	6.26	6.20	1.01	0.96	0.84	0.92	1.18	1.03	2.08	0.36
	1967	6.80	6.39	1.06	1.08	0.90	0.69	1.11	1.56	1.83	2.14
	1980	5.78	4.88	1.18	1.03	0.88	1.25	1.44	0.88	2.01	2.89
Polynesia											
Niue	1967–71	7.53	6.23	1.21	1.06	1.17	1.19	1.14	1.56	0.94	5.40
	1972–76	5.26	4.28	1.23	1.48	1.18	1.27	1.06	1.39	1.54	u
American Samoa	1962–66	6.46	6.23	1.04	0.69	0.87	0.98	1.14	1.10	1.57	1.46
	1970	5.92	5.72	1.03	1.04	0.77	0.88	1.17	1.12	1.63	3.13
Western Samoa	1961–66	8.50	7.30	(1.16)	u	u	u	u	u	u	u
	1966–71	7.80	7.40	(1.27)	u	u	u	u	u	u	u
	1971			(1.27)	1.32	1.12	1.26	1.37	1.58	1.92	1.39

Tonga	1966	6.95	6.80	1.02	0.88	0.99	0.90	0.76	1.20	1.36	0.82
	1970	6.29	7.23	0.87	u	0.94	1.05	0.74	0.80	0.68	0.64
Tuvalu	1973	3.12	2.44	1.28	1.67	1.04	1.21	1.64	0.92	2.88	u

Sources: Unless otherwise indicated, rates based on alternative sources are based on birth registration, with denominators usually taken from a census during the same year. The alternative sources are:

Fiji: Fiji, Bureau of Statistics (1971; 1976: table 32).

Solomon Islands: Solomon Islands, Ministry of Finance (1981). In this case rates are based on census reports of births during the year previous to the 1970 census, for Melanesians and Polynesians only.

Guam: Births are from Guam, Department of Public Health and Social Services (1980); numbers of women are from U.S. Department of Commerce (1983a).

Kiribati: Births are from Kiribati, Ministry of Finance (1975); numbers of women are from Groenewegen and Bailey (1975).

Trust Territory of the Pacific Islands: Births are from U.S. Department of State (1981); numbers of women are from University of Hawaii (n.d.) and also from Trust Territory of the Pacific Islands High Commissioner's Office (1975). Comparison rates for Yap for 1966 are from Underwood (1969).

Niue: Niue, Department of Justice (1978).

American Samoa: For 1962–66, births are from Government of American Samoa (1962–66), and for 1970, births are from Government of American Samoa (1971). Numbers of women are interpolated between the 1960 and 1970 censuses.

Western Samoa: Government of Western Samoa (1978).

Tonga: Government of Tonga (1967); Kingdom of Tonga (1983).

Tuvalu: Macrae (1980).

Notes: OC denotes own children, AS denotes alternative source, VR denotes vital registration, and WFS denotes World Fertility Survey. The censuses on which the own-children fertility estimates are based are: American Samoa, 1974; Fiji, 1976; Guam, 1980; Kiribati, 1978; Niue, 1976; Solomon Islands, 1976; TTPI, 1980; NMI, 1980; Marshalls, 1980; Truk, 1980; Yap, 1973 (for 1966) and 1980 (for 1967 and 1980); Tuvalu, 1979; and Western Samoa, 1961 (for 1961–66), 1966 (for 1966–71), and 1971 (for 1971); and Tonga, 1976.

u—unavailable, either because the rate from the alternative source is not available, or because it is zero.

sider), perhaps having to do with an increasing proportion of consensual unions recorded as marriages in this age group between one census and the next. (This interpretation, though speculative, is consistent with the observed fall in age at marriage and the slight decline in the *m* index of marital fertility control.) The Solomon Islands family planning program started in 1973 but received only moderate support from the government and had not been very active or effective by 1976. Table 5 indicates that the own-children fertility estimates are about 26 percent higher than estimates based on vital registration, suggesting that birth registration is not complete. The figure of 26 percent is based on a single year and should be viewed as approximate.

Micronesia

The coverage of Micronesia includes Guam, Kiribati, and the Trust Territory of the Pacific Islands (TTPI). TTPI in turn is broken down into Northern Mariana Islands (NMI), Marshall Islands, Palau, and the Federated States of Micronesia (FSM). The states of FSM are Ponape, Kosrae, Truk, and Yap.

Guam

Guam has a comparatively large population for its land size, so that its population density is quite high. The population is about 42 percent indigenous Chamorro, 21 percent Filipino, and 37 percent Caucasian and others, including mixed races. The presence of Caucasians reflects the large U.S. military establishment. The population growth rate has been about 2 percent annually, partly because of in-migration. Guam is highly Westernized, with low mortality, low non-own factors, and reasonably accurate age reporting, as indicated by a Myers's index of 2.1. Fertility has been falling steadily, to levels that are among the lowest in the Pacific, and the *m* index has been steadily increasing, suggesting substantial use of birth control for family limitation. SMAM has been rising very slowly, indicating that most of the fertility decline has been due to fertility limitation within marriage. The decline in marital fertility has been concentrated at the older reproductive ages, and fertility at 15–19 has actually increased. By 1979, family planning services were provided not only by the government and a voluntary organization, but also by the military. Table 5 shows that fertility estimates based alternatively on own children and vital registration agree quite closely for 1980.

Kiribati

Kiribati used to be part of the Gilbert and Ellice Islands, which separated in the mid-1970s to become Kiribati (Gilberts) and Tuvalu (Ellice Islands).

Kiribati had a population of about 56,000 in 1978, spread over many small islands in a vast ocean area. Its population density is moderately high. The population growth rate has been moderate, owing partly to out-migration. At 0.97, the sex ratio is slightly on the female side, probably owing mainly to labor migration of males to work in the phosphate mines on Nauru. Non-own factors are moderately high. Myers's index was 4.6 in 1978, indicating moderately accurate age reporting. Life expectancy is comparatively low for the region, at about 54 years.

Age at marriage has been slowly but steadily increasing. The TFR fell from about 7 in the late 1960s to 4.5 by the mid-1970s. It remained at that level until the most recent census in 1978. The MTFR followed a similar course, though at a higher level. Age-specific birth rates and marital birth rates fell at all ages, indicating birth control for spacing as well as for limiting purposes. The *m* index increased steadily over the entire period. Comparison of fertility estimates based on own children with those based on vital registration in Table 5 suggests that births are substantially underregistered.

Trust Territory of the Pacific Islands (TTPI)

Until 1976 all of the island groups included here under TTPI were a single political unit. The Commonwealth of the Northern Mariana Islands (NMI) split off in 1976 and will be a Commonwealth of the United States. The remainder of TTPI is being further divided into three additional entities. These are the Republic of Palau, the Marshall Islands Republic, and the Federated States of Micronesia (FSM). As mentioned, the FSM consists of Kosrae, Ponape, Truk, and Yap. In 1977 Ponape and Kosrae separated politically. But for reasons of comparability with previous censuses, Ponape and Kosrae are left combined in this paper; they are in any case quite similar in their fertility behavior. (This similarity is evident from separate tabulations for Ponape and Kosrae, which were computed but are not shown here.)

Population density is medium for the TTPI as a whole, but within TTPI there is considerable variation. For example, Truk is very densely populated, but Palau is sparsely populated and becoming even more so, owing to out-migration. Reported sex ratios vary from 1.03 for Ponape and Kosrae in 1980 to 1.11 in Northern Mariana Islands in 1980. Growth rates are fairly uniform at about 2 percent annually, except for Palau and Yap, which have low or negative growth rates, and the Marshalls, which are growing at about 3 percent. All of the island groups within the TTPI have rather high estimated life expectancies. Non-own factors are sometimes quite high, rising in most cases to more than 30 percent for older children and in Yap to more than 40 percent. Myers's index is in the range of 1–3, indicating reasonably accurate age reporting. (Myers's index rose slightly between the 1973 and 1980 censuses throughout most of TTPI, probably because interviewers received two weeks of training for the 1973 census, with considerable emphasis on how to collect age data, but only 2.5 days of training for the 1980 census.)

For the TTPI as a whole, fertility is high. TFRs and MTFRs generally rose slightly before 1965-70 and then fell slightly. Estimated fertility trends from three successive censuses overlap fairly closely, despite annual fluctuations. SMAM, though slowly rising, has been virtually constant at about 21.5 years. ASBRs and ASMBRs have changed very little. There does seem to be a slight tendency for age-specific marital birth rates at the younger ages to fall and rates at the older ages to rise, but this pattern of change may be an artifact of imperfections in the data. The fall in ASMBRs at younger ages and the rise at older ages are reflected in a falling *m* index, but it is highly unlikely that this decline has anything to do with birth control practices. Deliberate birth control for family limitation purposes appears to have been rare during the period under consideration.

According to comparisons shown in Table 5, own-children fertility estimates in TTPI are about 10 percent higher than registration-based estimates for 1967, and about 28 percent higher for 1973. The latter of these two estimates may be the more accurate. It is likely that the 10 percent figure for 1967 occurs because the alternative-source birth rate denominators were taken from the 1967 census, which is known to have suffered from undercount (University of Hawaii, School of Public Health, n.d.). The downward bias in the denominators raises the estimated birth rates computed from the alternative source. Thus there appears to be considerable underregistration of births.

The 1967 census was conducted by the U.S. Peace Corps with assistance from the University of Hawaii School of Public Health, and it is known to have been deficient in coverage on a number of outlying islands. The TTPI in general has had coverage problems; the 1973 census was taken to obtain a more complete enumeration because of less than adequate coverage in the 1970 census. When whole households or whole islands are missed, however, age-specific child-woman ratios and the own-children fertility estimates derived from them are not biased as long as the omitted population has the same fertility as the included population. In fact, examination of overlapping fertility trends based on successive censuses suggests that the own-children fertility estimates based on the 1967 census are reasonably accurate.

Northern Mariana Islands (NMI). NMI is one of the few component island groups of the TTPI where fertility began a definitive decline during the estimation period considered here. But NMI's population is small, so that its fertility decline did not have an appreciable impact on the trend in fertility in the TTPI as a whole. Fertility in NMI fell rapidly between the late 1960s and the mid-1970s, tending to level off in the late 1970s. The TFR fell from about 8 to 4 and the MTFR from about 9 to 5.5. Estimated trends from successive censuses agree fairly well during the period of overlapping estimates. SMAM increased over the estimation period, somewhat more rapidly than for the TTPI as a whole. ASBRs and ASMBRs fell at all ages, indicating practice of birth control for spacing as well as for limiting births. In Figures 3 and 5, age-specific rates for the earlier period are based on the 1973 census and age-specific rates for the later period are based on the 1980 census. When, alternatively, the change in the age pattern of fertility is estimated solely from the 1980 census, the numbers are somewhat different, but it is still true that fertility declines at all ages, indicating birth control for spacing as well as limiting.

The marital birth rate at ages 15–19 (Appendix Table 2) shows a very large decline starting from an extremely high level. This finding is unquestionably spurious, as the estimated birth rate is many times higher than ever reliably documented in any other population, in the South Pacific or elsewhere. Evidently many births at 15–19 (and probably a good many at 20–24 as well) are occurring in unions not recorded as marriages in the census. It will be recalled that we estimate age-specific marital birth rates by dividing age-specific birth rates for all women by corresponding age-specific proportions currently married; therefore, to the extent that births occur in consensual unions, our estimates of age-specific marital birth rates are inflated. The fact that our estimate of marital fertility at 15–19 falls so dramatically may indicate that the prevalence of consensual unions is declining, or that the 1980 census definition of marriage was broadened to include more consensual unions, or both. The *m* index of fertility control also increased, and the agreement of overlapping trends in *m* from successive censuses is fairly good. (Because the *m* index, like the MTFR, is calculated using marital birth rates starting at age 20, it is unaffected by the highly biased rate at ages 15–19.) To our knowledge there is no formal government family planning program in NMI. The comparisons of TFRs estimated by the own-children method with TFRs estimated from vital registration data in Table 5 suggest that birth registration is essentially complete. The apparent over-registration of about 10 percent in 1967 probably occurs because of the 1967 census undercount, mentioned earlier, which has the effect of spuriously inflating birth rates estimated from vital registration statistics.

Marshall Islands. In the Marshalls, SMAM has been relatively constant over time, at a level slightly lower than that for the TTPI as a whole. Fertility also has been fairly constant over the estimation period, but estimates based on the 1973 census tend to be somewhat higher than those based on the 1980 census during the period of overlapping estimates. In Figures 3 and 5 this results in slight declines in estimated ASBRs and ASMBRs at the peak reproductive ages that may not be real. When the change in the age pattern of fertility is graphed from estimates based solely on the 1980 census, however, basically the same age pattern of change emerges. The *m* index of fertility control remains essentially constant over the estimation period; results from each census separately suggest a decline in *m*, but the average *m* from each census shows virtually no change.

Palau. Palau (Belau) has a negative population growth rate owing to high rates of out-migration. SMAM increased fairly rapidly over the estimation period, to 25.2 in 1980. Fertility started falling rapidly from very high levels around 1966, rose somewhat in the late 1960s and early 1970s, and then continued to fall steeply thereafter. The fertility trend estimates from successive censuses overlap remarkably closely, and the closeness of the overlap confirms the reality of the temporary fertility increase in the late 1960s and early 1970s. This fertility increase is observable in all age-specific rates above age 20 as well as in TFRs and MTFRs, but the reasons for it are obscure. Over the estimation period as a whole, ASBRs and ASMBRs fell at all ages, except for 15–19, where marital fertility rose sharply. The reasons for this latter increase are again obscure. Overall, the fertility decline was very steep, with the TFR declining from almost 9 to slightly more than 3 in fourteen years. The *m* index increased steadily and steeply from the mid-1960s onward. There is no formal family planning program.

Federated States of Micronesia (FSM). Most of the component states of the FSM are demographically rather similar, except for Yap, where, in contrast with the other states, fertility seems to have begun to decline, though not by very much. SMAM increased slowly but steadily in the FSM (including Yap) over the estimation period. TFRs and MTFRs tended to rise slightly then fall slightly over the estimation period, remaining at a high level at the end. Thus the trend for the FSM resembles that for the TTPI as a whole, which is not surprising since the FSM accounts for some two-thirds of the TTPI's population. The overlap of trends estimated from successive censuses is quite close for the FSM as a whole. ASBRs tended to fall at the younger ages and rise at the older ages, but the changes were slight. The fall at the younger ages may have been due to rising age at marriage or possibly to reporting changes related to marriage. The *m* index declined substantially over the estimation period, and the overlapping trends in *m* based on successive censuses agree quite well. The decline in *m* clearly cannot be attributed to a decline in the use of family limitation practices, which did not previously exist, and its causes are unclear. Overall, it is apparent that as late as 1980 fertility transition had not yet begun in the FSM.

Polynesia

Our coverage of Polynesia is limited, the most important omission being French Polynesia. Hawaii is also excluded, since it is more similar to the mainland United States than to the rest of Polynesia. Included are Niue, American Samoa, Western Samoa, Tonga, and Tuvalu.

Niue

Niue has the second lowest population density of the island groups examined in this paper, and its population is declining even further owing to migration to New Zealand. It does have a balanced sex ratio, however, indicating that migration is not sex-selective. Life expectancy is high. Nonown factors are also high, probably because of temporary family separations due to high rates of migration. SMAM is quite high at almost 25 years and virtually constant over time. Fertility appears to have been falling rapidly since about 1970, although there is a mysterious trough in the trend around 1967. The trough may be largely real, since Myers's index is only 3.7, indicating fairly accurate age reporting. Large, real fluctuations are quite possible, in view of Niue's small population size of fewer than 4,000 persons. The TFR appears to have fallen very rapidly, from about 8 to 5 in five years. The decline occurred at all ages except 15–19, with decreases concentrated at ages over 25. The estimated ASMBRs indicate considerable difficulty with census measurement of nuptiality. The ASMBR at 15–19 is exceedingly large, in the neighborhood of 3,000 (Appendix Table 2), indicating that a great many unions in which births are occurring are not recorded as marriages in the census. The ASMBR at 15–19 is therefore greatly inflated, since it is calculated on the assumption that all births occur within marriage, by dividing the ASBR at 15–19 by the corresponding age-specific proportion currently married. To some extent this kind of distortion undoubtedly occurs also at 20–24. The steep tapering off of age-specific marital birth rates between ages 20 and 50, which undoubtedly is partly spurious, results in an inflated value of m. In sum, it does seem that marital fertility decline is well under way in Niue, but the measures of marital fertility and marital fertility control presented here are seriously distorted. To emphasize that they are severely biased, they are enclosed in parentheses in the tables. There is no government family planning program in Niue, and in fact the government is anxious to halt the decline of population size.

American Samoa

American Samoa, with a population of about 32,000 in 1980, is fairly densely populated. The estimates of life expectancy are high. Partly because of substantial net out-migration to Hawaii and the mainland United States, the population growth rate is moderate, at about 1.8 percent per year. Sex ratios are within the normal range, indicating that this out-migration is not excessively sex-selective. Myers's index indicates considerable improvement in age reporting during the 1970s, with the index reaching 2.6 in 1980. Non-own factors are moderately high but have fallen somewhat between successive censuses. SMAM has been fairly high, at slightly more than 23 years, and it remained virtually constant over the estimation period.

Total fertility rates have been dropping fairly steadily since the mid-1960s. The TFR decreased from about 6.5 to slightly more than 4 children per woman by 1980, and this decline is accounted for almost entirely by reduction of marital fertility. The *m* index of marital fertility control rose steadily over the period under consideration. Overlapping trends of fertility and of the *m* index estimated from successive censuses are in close agreement. Although the government does not have a formal family planning program, it does support family planning for health purposes, and family planning supplies and services are readily available. In Table 5, own-children fertility estimates agree rather well with estimates based on vital registration, although the rates based on own children are slightly higher, particularly at the older reproductive ages. The comparatively high own-children estimates of fertility at the older reproductive ages may be due largely to adoption, which tends to distort the age pattern of the own-children fertility estimates but not the age pattern of the fertility estimates based on vital registration.

Western Samoa

Western Samoa has a land area many times larger than that of American Samoa, and it has a population more than four times as large. Its population density is moderately low. Despite a high rate of out-migration, fertility has declined very little, so that the growth rate is still moderately high, at about 2.2 percent annually. The trend in Myers's index from one census to the next is somewhat erratic, at moderately or quite low values. The sex ratio is at the upper end of the normal range. Non-own factors are high in Western Samoa, probably because of frequent, temporary family separations due to high rates of out-migration. Life expectancy is high, in the neighborhood of 65 years. SMAM, at about 21–22 years, changed little over the estimation period. Fertility has been very high, with the TFR in the neighborhood of 8 to 8.5. The own-children fertility estimates suggest that fertility rose slightly during the late 1950s and fell slightly during the late 1960s. The *m* index may have risen slightly during the late 1960s, but the trend is erratic. Overlapping fertility estimates suggest caution in interpreting estimates during the five years immediately preceding each census, based on children under five years of age. The pattern of overlap suggests a spurious estimated fertility decline during the five years preceding each census. When the spurious fertility dip during the five years before each census is discounted, the fertility trends estimated from successive censuses overlap rather well. The estimated slight decline in fertility between 1967 and 1971, which may not be real, immediately preceded the founding of a family planning association as well as the start of a government program in 1971. Table 5 shows that the own-children fertility estimates are 16–27 percent higher than comparable estimates derived from vital registration. This comparison suggests fairly substantial underregistration of births.

Tonga

Tonga, with a population approaching 100,000 by the late 1970s, is fairly densely populated. The population sex ratio is slightly on the masculine side. Myers's index indicates moderately accurate age reporting. Because of substantial out-migration (mainly to New Zealand) and some fertility decline, population growth is modest, at about 1.5 percent per year. Estimated life expectancy is high, at above 65 years. Despite substantial out-migration, non-own factors are quite low. SMAM, at 24–25 years, changed little over the estimation period. Thus the decline in the TFR, from about 7 to 4, stemmed almost entirely from marital fertility decline. The *m* index of marital fertility control has increased steadily in recent years. Overlapping own-children fertility estimates based on successive censuses show rather poor agreement, as do overlapping estimates of the trend in the *m* index. Problems with data quality probably account for these discrepancies, but it is not clear precisely what these problems are. The 1966 census was a de facto count, whereas the 1976 census was more or less a de jure count, and this change may account for some of the discrepancies. Migration is unlikely to be the culprit, because other island groups with equally high migration rates, such as Western Samoa, show a much higher degree of consistency of overlapping estimates. Tonga has had a government family planning program since 1958 and private family planning associations since 1969. In Table 5, TFRs estimated alternatively from own children and from vital registration agree to within 13 percent in 1980. But estimates of the TFR based on own children are less than those based on vital registration, reversing the usual pattern. We are unable to explain this reversal.

Tuvalu

As mentioned earlier, the Gilbert and Ellice Islands, formerly under British trusteeship, split in the mid-1970s to become Kiribati (Gilberts) and Tuvalu (Ellice Islands). Tuvalu's population is much smaller than that of Kiribati, only about 7,400 in 1979. Its population density is quite high. Its population growth rate, calculated from census totals in 1973 and 1979, is also very high, at 4.1 percent annually. This high growth occurred mainly because many persons migrated back to Tuvalu from Kiribati at about the time the two island groups became two separate governmental entities. Perhaps because of high rates of migration, non-own factors are quite high for Tuvalu. Life expectancy is moderately high at about 60 years. SMAM increased moderately over the estimation period, from slightly over 23 years to almost 25 years.

A government family planning program was started in the Gilbert and Ellice Islands in 1968. (A first attempt to establish a program in 1963 was unsuccessful.) A rapid decline in marital fertility commenced in both Kiribati and Tuvalu starting about 1968, at the time that the government family planning program began. The trends in fertility since 1968 have been remarkably similar in the two island groups. In both of them the TFR decline leveled off during the late 1970s. And in both places fertility has tended to decline at all reproductive ages, indicating that birth control was adopted for spacing and limiting purposes simultaneously. However, the level of the TFR has consistently been about one child lower in Tuvalu than in Kiribati. The *m* index shows a steady increase over time, consistent with the substantial decline in marital fertility. Since we have only one census on which to base own-children fertility estimates, no consistency checks based on examination of overlapping trends can be made. The comparison of fertility estimates based on own children with those based on vital registration in Table 5 suggests that births are fairly substantially underregistered, but not as much as in Kiribati.

CONCLUSION

This review of census-based estimates of fertility trends in Pacific Islands is primarily descriptive and offers little in the way of interpretation. The following observations, however, can be made: From the point of view of reproductive behavior, the Pacific Islands are highly diverse, not only among the major divisions of Micronesia, Melanesia, and Polynesia, but also within each division. Mortality, as measured indirectly from censuses, is low in the islands and shows less variability than fertility. As a result of low mortality, high proportions of children survive, providing parents with incentive to reduce family size, especially in those cases where population density is high (posing problems of population pressure and inheritance) and the safety valve of out-migration is either unavailable or unused. Throughout the region, age at marriage has been fairly high for some time, so that fertility declines, where they have occurred, have been due primarily to the advent of marital fertility control.

Appendix Table 1. Total fertility rates and age-specific birth rates, derived by the own-children method

Island group	Census[a] year	Period of estimate[b]	TFR[c]	Age-specific birth rates[d] 15–19	20–24	25–29	30–34	35–39	40–44	45–49
Melanesia										
Fiji										
Fijians	1976	1962–66	5.95	68	269	301	260	186	86	18
		1967–71	5.16	57	232	269	219	160	76	17
		1972–76	4.53	56	218	242	191	126	59	14
Indians	1976	1962–66	6.28	144	351	301	224	146	72	18
		1967–71	4.40	92	278	229	144	88	38	12
		1972–75	3.55	64	240	203	116	55	24	7
Solomon Islands	1976	1967–71	6.97	115	268	306	295	244	116	51
		1972–76	7.66	138	309	349	309	241	139	46
Micronesia										
Guam	1980	1966–70	4.24	57	190	222	177	128	61	11
		1971–75	3.55	69	181	188	137	86	39	10
		1976–80	3.02	66	171	164	110	64	24	6
Kiribati	1978	1964–68	6.85	109	296	323	296	226	103	16
		1969–73	5.13	91	229	246	216	161	67	15
		1974–78	4.51	73	218	220	199	134	49	10
TTPI	1967	1953–57	6.87	159	316	315	268	192	100	24
		1958–62	7.40	147	327	357	300	219	104	27
		1963–67	7.08	112	302	334	313	223	104	29
	1973	1959–63	7.39	146	322	351	297	220	106	37
		1964–68	7.76	123	311	353	338	257	127	43
		1969–73	7.36	107	295	338	316	253	121	42

Appendix Table 1. *(continued)*

Island group	Census[a] year	Period of estimate[b]	TFR[c]	Age-specific birth rates[d]						
				15–19	20–24	25–29	30–34	35–39	40–44	45–49
	1980	1966–70	7.41	116	304	336	307	241	122	54
		1971–75	6.91	107	276	318	281	221	126	55
		1976–80	6.28	104	264	290	253	187	110	47
NMI	1973	1959–63	8.00	110	351	415	320	259	126	19
		1964–68	7.68	101	329	376	352	243	108	27
		1969–73	6.20	105	297	291	252	204	73	16
	1980	1966–70	6.81	94	294	326	269	251	96	32
		1971–75	4.90	83	241	235	189	139	75	18
		1976–80	4.24	103	227	208	163	86	42	17
Marshalls	1973	1959–63	7.92	171	338	364	316	238	114	44
		1964–68	8.72	161	345	398	383	274	135	49
		1969–73	8.42	126	322	380	374	284	130	70
	1980	1966–70	8.14	147	346	377	344	241	124	49
		1971–75	7.92	149	324	363	317	238	131	62
		1976–80	7.88	155	332	356	305	242	133	53
Palau	1973	1959–63	8.25	91	271	376	368	326	140	76
		1964–68	8.47	73	285	357	360	325	208	86
		1969–73	6.62	81	258	294	270	223	144	54
	1980	1966–70	7.42	68	267	328	299	283	152	86
		1971–75	6.26	83	232	287	244	193	136	76
		1976–80	4.23	53	185	211	155	100	79	63
FSM	1973	1959–63	6.90	156	317	326	272	188	91	32
		1964–68	7.27	121	294	332	316	240	114	36
		1969–73	7.34	104	288	341	318	258	124	35

	1980	1966–70	7.06	117	295	288	306	232	119	54
		1971–75	7.10	99	272	326	298	240	132	54
		1976–80	6.50	92	256	297	273	209	125	49
Ponape & Kosrae	1973	1959–63	7.47	158	342	343	293	215	115	29
		1964–68	7.78	110	316	348	338	258	146	40
		1969–73	7.74	108	308	362	325	274	132	39
	1980	1966–70	7.58	100	320	351	323	243	125	54
		1971–75	7.40	112	292	349	309	240	134	44
		1976–80	6.74	105	276	309	288	206	121	45
Truk	1973	1959–63	6.78	158	302	325	267	187	85	32
		1964–68	7.16	134	292	328	308	238	96	35
		1969–73	7.40	103	286	344	329	258	125	35
	1980	1966–70	7.28	128	295	325	308	227	123	50
		1971–75	7.17	90	268	320	306	254	135	61
		1976–80	6.68	80	247	306	279	228	144	53
Yap	1973	1959–63	5.89	143	312	282	227	126	54	34
		1964–68	6.23	97	233	307	286	195	95	32
		1969–73	6.01	100	231	265	267	214	95	30
	1980	1966–70	6.14	124	213	265	251	216	88	72
		1971–75	5.98	96	228	276	241	181	113	60
		1976–80	5.01	106	230	227	188	145	64	42
Polynesia										
Niue	1976	1967–71	7.53	106	360	435	316	211	51	27
		1972–76	5.26	121	305	285	200	100	40	0
American Samoa	1974	1960–64	6.49	42	231	329	322	240	110	25
		1965–69	6.48	46	226	318	306	245	119	37
		1970–74	5.46	40	210	264	238	190	109	41
	1980	1966–70	6.21	56	214	306	292	223	110	42
		1971–75	5.12	39	203	254	217	171	93	48
		1976–80	4.67	42	175	254	200	143	76	44

Appendix Table 1. *(continued)*

Island group	Census[a] year	Period of estimate[b]	TFR[c]	Age-specific birth rates[d] 15–19	20–24	25–29	30–34	35–39	40–44	45–49
Western Samoa	1961	1947–51	8.08	125	252	308	296	263	211	160
		1952–56	8.34	103	266	327	318	264	214	180
		1957–61	8.30	73	268	342	324	273	204	177
	1966	1952–56	8.15	134	324	375	339	251	144	61
		1957–61	8.73	118	337	412	378	302	146	53
		1962–66	8.14	76	316	383	380	278	147	46
	1971	1957–61	8.59	136	356	400	378	278	127	41
		1962–66	8.46	98	343	403	371	289	150	38
		1967–71	7.78	66	316	390	350	263	131	40
Tonga	1966	1952–56	6.49	78	226	286	282	219	126	81
		1957–61	6.61	57	230	305	294	230	136	71
		1962–66	7.16	37	222	325	314	263	178	93
	1976	1962–66	6.16	44	213	311	283	223	125	33
		1967–71	6.15	40	232	316	283	213	114	32
		1972–76	4.66	25	175	243	220	166	79	24
Tuvalu	1979	1965–69	4.99	44	213	258	225	172	76	8
		1970–74	3.31	47	190	175	129	76	41	5
		1975–79	2.80	27	139	160	144	68	22	1

a. The census to which the own-children method was applied.

b. The time period to which the fertility estimates pertain.

c. Rate per woman.

d. Rates per thousand women.

Appendix Table 2. Marital total fertility rates and age-specific marital birth rates

Island group	Census year	Period of estimate	MTFR[a]	Age-specific marital birth rates[b]						
				15–19	20–24	25–29	30–34	35–39	40–44	45–49
Melanesia										
Fiji										
Fijians	1976	1962–66	7.40	666	475	371	298	213	101	22
		1967–71	6.48	581	420	334	250	182	88	21
		1972–76	5.84	581	410	309	220	143	69	17
Indians	1976	1962–66	6.28	511	436	323	237	156	81	22
		1967–71	4.65	444	372	251	154	94	42	15
		1972–76	4.00	370	347	232	126	60	27	9
Solomon Islands	1976	1967–71	8.56	900	484	393	350	282	139	64
		1972–76	9.02	656	501	438	362	280	166	58
Micronesia										
Guam	1980	1966–70	5.02	494	301	266	203	146	74	14
		1971–75	4.24	638	299	231	159	99	47	13
		1976–80	3.71	661	296	206	130	75	29	7
Kiribati	1978	1964–68	7.85	407	429	389	341	269	121	21
		1969–73	6.04	374	352	308	255	192	82	19
		1974–78	5.51	330	345	282	241	160	60	13
TTPI	1967	1953–57	7.88	922	511	391	313	219	113	30
		1958–62	8.85	833	549	456	356	255	120	33
		1963–67	8.85	621	528	441	379	265	123	35
	1973	1959–63	8.28	873	495	420	337	244	114	45
		1964–68	9.02	721	496	435	390	291	141	52
		1969–73	8.85	612	488	428	372	293	138	51

Appendix Table 2. *(continued)*

Island group	Census year	Period of estimate	MTFR[a]	Age-specific marital birth rates[b] 15–19	20–24	25–29	30–34	35–39	40–44	45–49
NMI	1980	1966–70	8.73	674	492	418	358	276	137	66
		1971–75	8.36	604	463	406	333	258	145	66
		1976–80	7.80	580	461	382	306	222	131	57
	1973	1959–63	9.11	3716	572	497	312	284	132	24
		1964–68	9.11	1994	558	470	367	275	118	34
		1969–73	7.67	1461	527	381	282	239	85	21
Marshalls	1980	1966–70	8.20	1635	505	413	286	287	107	40
		1971–75	6.18	1058	433	311	216	164	89	24
		1976–80	5.49	1035	428	290	202	105	52	22
	1973	1959–63	8.88	1113	553	419	368	251	130	56
		1964–68	9.85	877	551	465	443	296	154	60
		1969–73	9.64	587	502	451	430	314	148	84
Palau	1980	1966–70	9.26	749	547	444	397	263	141	60
		1971–75	8.94	655	501	434	364	266	150	74
		1976–80	8.87	600	502	433	348	278	152	62
	1973	1959–63	10.07	729	406	465	531	386	145	82
		1964–68	10.88	661	486	468	505	392	226	98
		1969–73	8.99	839	514	412	369	275	165	64
FSM	1980	1966–70	9.76	649	484	442	415	344	168	99
		1971–75	8.64	913	496	413	329	240	158	92
		1976–80	6.57	699	481	326	203	127	97	80
	1973	1959–63	7.47	763	456	393	300	210	98	38
		1964–68	8.29	611	445	411	359	273	126	44
		1969–73	8.73	540	461	433	372	298	140	43

	1980	1966-70	8.16	597	457	359	351	266	133	66
		1971-75	8.56	517	446	417	352	279	151	66
		1976-80	8.11	497	446	391	331	247	147	59
Ponape & Kosrae	1973	1959-63	8.27	613	495	425	331	250	117	35
		1964-68	9.09	470	484	441	391	301	154	48
		1969-73	9.32	519	501	468	383	320	146	46
	1980	1966-70	9.04	450	502	448	376	283	134	64
		1971-75	8.98	562	486	456	368	281	151	52
		1976-80	8.45	602	490	413	350	241	142	53
Truk	1973	1959-63	7.15	1231	417	380	295	203	97	39
		1964-68	7.95	921	429	395	348	265	110	42
		1969-73	8.67	631	448	426	382	294	144	42
	1980	1966-70	8.24	836	444	395	352	256	141	60
		1971-75	8.55	530	430	399	358	293	156	74
		1976-80	8.28	428	427	393	336	269	167	64
Yap	1973	1959-63	6.87	422	533	378	226	138	57	42
		1964-68	7.42	323	398	414	305	223	105	40
		1969-73	7.32	379	393	361	307	253	110	39
	1980	1966-70	7.19	433	364	359	275	250	99	90
		1971-75	7.40	383	389	376	286	218	134	78
		1976-80	6.31	499	392	312	243	182	79	55
Polynesia										
Niue	1976	1967-71	11.52	3401	934	632	358	286	61	34
		1972-76	8.34	2934	836	393	267	123	50	0
American Samoa	1974	1960-64	8.44	474	491	408	369	265	126	30
		1965-69	8.45	529	491	396	353	271	135	43
		1970-74	7.28	468	467	331	276	211	123	47

Appendix Table 2. *(continued)*

Island group	Census year	Period of estimate	MTFR[a]	Age-specific marital birth rates[b]						
				15–19	20–24	25–29	30–34	35–39	40–44	45–49
	1980	1966–70	8.03	648	465	382	337	247	126	49
		1971–75	6.86	460	452	319	251	190	105	55
		1976–80	6.47	618	418	340	236	162	86	52
Western Samoa	1961	1947–51	10.96	959	525	450	403	329	283	203
		1952–56	10.93	744	509	449	408	321	272	226
		1957–61	10.49	496	474	443	393	324	245	220
	1966	1952–56	10.66	969	618	515	434	305	183	77
		1957–61	10.92	804	595	534	458	357	175	65
		1962–66	10.25	417	540	470	463	345	175	58
	1971	1957–61	10.70	926	630	519	459	329	153	51
		1962–66	10.57	543	585	495	450	358	178	48
		1967–71	9.60	421	538	462	407	315	151	48
Tonga	1966	1952–56	10.40	746	572	584	398	262	156	108
		1957–61	9.92	618	549	520	386	273	165	90
		1962–66	10.00	467	503	477	386	311	209	114
	1976	1962–66	8.70	555	483	456	348	264	147	41
		1967–71	8.65	615	530	439	340	250	132	38
		1972–76	6.81	479	434	349	267	193	92	28
Tuvalu	1979	1965–69	7.40	368	501	370	296	209	93	11
		1970–74	5.38	505	468	260	183	104	54	7
		1975–79	4.97	494	391	264	207	98	31	2

a. Rate per woman.

b. Rates per thousand women.

Appendix Table 3. Singulate mean ages at marriage and age-specific proportions currently married (in percent)

Island group	Census year	SMAM	Proportions married, by age 15-19	20-24	25-29	30-34	35-39	40-44	45-49
Melanesia									
Fiji									
Fijians	1956	22.3	11.5	57.7	79.4	86.0	85.4	82.7	78.9
	1966	22.4	9.9	56.3	81.6	88.0	88.1	86.4	82.8
	1976	22.1	9.6	52.2	77.4	86.2	87.7	86.2	82.3
Indians	1956	18.1	45.1	89.5	94.6	94.8	91.6	86.7	77.1
	1966	20.3	22.3	77.3	92.9	94.5	94.2	90.5	83.2
	1976	21.1	15.7	66.4	86.1	91.6	90.2	87.6	81.1
Solomon Islands	1970	22.3	15.3	57.2	78.4	84.6	86.4	83.6	79.6
	1976	21.1	25.3	64.8	80.7	85.9	85.7	84.5	79.5
Micronesia									
Guam	1960	20.5	12.8	67.2	86.3	89.4	89.3	83.1	79.6
	1980	22.1	9.5	56.3	78.6	84.3	85.1	82.1	81.9
Kiribati	1968	19.9	25.6	67.1	81.6	85.8	84.0	83.1	76.9
	1973	20.3	23.1	63.3	78.5	83.5	84.0	79.6	77.0
	1978	20.8	20.8	62.8	77.9	81.6	83.3	82.9	76.3
TTPI	1973	21.8	17.7	59.5	77.9	84.1	85.6	86.6	82.3
	1980	22.2	18.2	56.1	74.8	81.8	83.2	83.2	82.0
NMI	1973	22.9	8.3	55.2	74.7	86.2	84.2	83.8	78.6
	1980	23.4	11.0	51.9	70.1	77.7	80.5	77.6	78.1
Marshalls	1973	20.8	23.0	64.8	83.5	87.2	89.3	87.7	83.8
	1980	20.9	27.3	66.9	81.6	87.9	86.2	87.7	86.8

Appendix Table 3. *(continued)*

Island group	Census year	SMAM	Proportions married, by age						
			15–19	20–24	25–29	30–34	35–39	40–44	45–49
Palau	1973	24.1	8.9	46.0	69.1	74.3	80.4	85.3	82.3
	1980	25.2	6.9	34.3	62.5	77.1	78.1	79.0	76.3
FSM	1973	21.5	19.0	60.6	77.8	84.4	85.8	87.1	82.6
	1980	22.0	18.3	55.5	75.1	81.0	83.6	84.0	82.1
Ponape & Kosrae	1973	22.0	19.6	59.6	76.3	83.9	85.5	88.6	84.2
	1980	22.7	16.1	54.3	73.9	81.4	85.3	83.3	84.6
Truk	1973	21.3	17.2	61.7	79.8	85.2	86.7	86.6	82.7
	1980	21.6	19.6	55.7	76.5	82.1	83.8	85.9	82.7
Yap	1973	21.2	24.6	58.7	73.2	83.5	82.7	84.4	77.7
	1980	21.7	19.4	58.8	72.5	73.9	78.0	78.9	75.9
Polynesia									
Niue	1971	24.8	3.6	37.5	70.7	81.8	77.5	82.4	80.5
	1976	24.9	4.6	35.4	74.5	68.5	85.0	80.6	77.8
American Samoa	1956	22.9	5.3	46.9	76.1	82.9	83.5	82.6	79.7
	1960	23.2	8.9	47.4	80.8	87.5	90.5	86.9	82.4
	1974	23.2	8.4	44.5	79.6	86.0	90.1	88.8	87.3
	1980	24.3	5.5	39.5	70.9	83.3	85.9	87.4	82.8
Western Samoa	1956	22.1	14.3	54.4	74.9	80.2	83.3	80.9	80.2
	1961	21.5	15.1	58.6	79.3	84.6	85.5	85.1	81.2
	1966	20.3	21.2	58.6	83.5	80.0	76.0	83.3	78.6
	1971	22.0	9.9	59.1	85.7	92.2	91.0	91.0	87.2
Tonga	1956	25.0	9.9	40.6	53.4	73.3	83.8	81.5	76.5
	1966	24.0	7.2	45.3	73.0	83.8	84.8	86.2	83.7
	1976	24.3	4.6	38.6	68.8	81.7	86.3	85.8	84.2

Tuvalu	1968	23.6	10.9	41.7	68.9	73.7	79.0	79.2	74.1
	1973	24.2	8.1	39.9	66.5	68.0	70.3	73.2	70.7
	1979	25.4	3.2	31.9	55.2	70.7	68.5	69.2	69.5

REFERENCES

Brass, William

1971 On the scale of mortality. In William Brass (ed.), *Biological Aspects of Demography*. London: Taylor and Francis.

1975 *Methods for Estimating Fertility and Mortality from Limited and Defective Data*. Chapel Hill: International Program of Laboratories for Population Statistics.

Carroll, Vern

1970 Introduction: What does adoption mean? In Vern Carroll (ed.), *Adoption in Eastern Oceania*. Honolulu: University of Hawaii Press.

Cho, Lee-Jay

1973 The own-children approach to fertility estimation: An elaboration. In *International Population Conference, Liege 1973*. Liege: International Union for the Scientific Study of Population.

Coale, Ansley J., and Paul Demeny

1966 *Regional Model Life Tables and Stable Populations*. Princeton: Princeton University Press.

Coale, Ansley J., and T. James Trussell

1974 Model fertility schedules: Variations in the age structure of childbearing in human populations. *Population Index* 40:185–258.

1975 Erratum. *Population Index* 41:572.

1978 Technical note: Finding the two parameters that specify a model schedule of marital fertility. *Population Index* 44:203–13.

Fiefia, Sione N.

1966 *Report on the Results of the 1966 Census: Tonga*. Nukualofa: Kingdom of Tonga.

Fiji, Bureau of Statistics

1971 *Annual Statistical Report, Fiji 1970–71*. Suva: Bureau of Statistics.

1976 *Fiji Fertility Survey 1974: Principal Report*. Suva: Bureau of Statistics.

Fiji, Parliament of Fiji

1976 *Report on the Census of the Population*. Suva: Parliament of Fiji.

Government of American Samoa

1962–1966 *Annual Reports to the Secretary of the Interior*. Pago Pago.

1971 *First Vital Statistical Report 1970–71*. Pago Pago.

n.d. *Report on the 1974 Census of American Samoa, Part I: Basic Information*. Pago Pago.

Government of Tonga

1967 *Report of the Minister of Health for the Year 1966.* Nukualofa: R.S. Wallbank, Government Printer.

Government of Tuvalu

1980 *A Report on the Results of the Census of the Population of Tuvalu, 1979.* Funafuti.

Government of Western Samoa

1962 *Population Census 1961.* Apia: Census Commissioner's Office.

1968 *Population Census 1966.* Apia: Bureau of Statistics.

1978 *Census of Population and Housing, 1976.* Apia: Department of Statistics.

n.d. *Census of Population and Housing, 1971.* Apia: Department of Statistics.

Groenewegen, Ko

1970 *Report on the Census of Population, 1970, British Solomon Islands Protectorate.* Southampton, England: Hobbs the Printers, Ltd.

Groenewegen, Ko, and E. Bailey

1975 *A Report on the 1973 Census of Population: Basic Information, Gilbert and Ellice Islands.* Bairiki: Office of the Chief Minister.

Guam, Department of Health and Social Services

1980 *Annual Statistical Report 1980.* Agana: Department of Health and Social Services.

Henry, Louis

1961 Some data on natural fertility. *Eugenics Quarterly* 8:81–91.

Ho, Victoria

1977 *MATCH: A Program to Match Children and Spouses to Women, Stage 1 of Own-Children Package.* Honolulu: East-West Population Institute, East-West Center. Photocopy.

Kingdom of Tonga

1976 *Census of Population and Housing, 1976: Vol. I, Administrative Report and Tables.* Nukualofa: Kingdom of Tonga.

1983 *Statistical Abstact 1983.* Nukualofa: Statistics Department, Kingdom of Tonga.

Kiribati, Ministry of Finance

1975 *Annual Abstract of Statistics 1975.* Tarawa: Government Printing Office.

Kiribati, Ministry of Home Affairs

1980 *Report on the 1978 Census of Population and Housing, Vol. I: Basic Information and Tables.* Bairiki.

Kiribati, Ministry of Home Affairs and Decentralisation

1983 *Report on the 1978 Census of Population and Housing, Vol. II: Analytical Report: Historical Introduction, Demographic Analysis, Economic Characteristics.* Bairiki.

Levin, Michael J., and Robert D. Retherford

1982 The effect of alternative matching procedures on fertility estimates based on the own-children method. *Asian and Pacific Census Forum* 8(3):11–17.

Lucas, David, and Helen Ware

1981 Fertility and family planning in the South Pacific. *Studies in Family Planning* 12:303–15.

Macrae, Sheila

1980 Fertility. In Government of Tuvalu, *A Report on the Census of the Population of Tuvalu 1979.* Funafuti: Government of Tuvalu.

Midkiff, Ann A., and Minja Kim Choe

1978 *OWCH3: A Program to Compute Estimates of Age-Specific Birth Rates in the Recent Past from Own-Children Tables.* Honolulu: East-West Population Institute, East-West Center. Photocopy.

Nag, Moni

1962 *Factors Affecting Human Fertility in Nonindustrial Societies: A Cross-Cultural Study.* Yale University Publications in Anthropology, No. 66. New Haven: Yale University.

Niue, Department of Justice

1974 *Census of Population and Dwellings, Niue Island, 1971.* Wellington, New Zealand: Government Printer.

1978 *1976 Census of Population and Housing.* Alofi: Department of Justice.

Retherford, Robert D.

1978 Single-year computational procedures used in the own-children method of fertility estimation. *Asian and Pacific Census Forum* 4(3):5–8.

Retherford, Robert D., Aphichat Chamratrithirong, and Anuri Wanglee

1980 The impact of alternative mortality assumptions on own-children estimates of fertility for Thailand. *Asian and Pacific Census Forum* 6(3):5–8.

Retherford, Robert D., and Lee-Jay Cho

1978 Age-parity-specific birth rates and birth probabilities from census or survey data on own children. *Population Studies* 32:567–81.

Shryock, Henry S., and Jacob S. Siegel

1973 *The Methods and Materials of Demography*. Washington, D.C.: Government Printing Office.

Solomon Islands, Ministry of Finance

1981 *Report on the Census of Population 1976; Volume 2: Demographic Analysis*. Honiara: Ministry of Finance.

Trust Territory of the Pacific Islands, High Commissioner's Office

1975 *1973 Population of the Trust Territory of the Pacific Islands*. Saipan: High Commissioner's Office.

Underwood, Jane H.

1969 Preliminary investigations of demographic features and ecological variables of a Micronesian island population. *Micronesica* 5(1):1–24.

University of Hawaii, School of Public Health

n.d. *1967 Population Census, Trust Territory of the Pacific Islands*. Honolulu.

United States, Department of Commerce

1973a *Census of Population, 1970, Vol. 1: Characteristics of the Population*, Part 54. Washington, D.C.: Government Printing Office.

1973b *Population of Trust Territory of the Pacific Islands*. Saipan: Office of the Census Coordinator.

1980 *Census of Population: Guam*. Washington, D.C.: Bureau of the Census.

1983a *1980 Census of Population*. PC80-1-A54. Washington, D.C.: Government Printing Office.

1983b *Census of Population, 1980, American Samoa*. Washington, D.C.: Bureau of the Census.

1983c *Census of Population, 1980: Trust Territory of the Pacific Islands*. Washington, D.C.: Bureau of the Census.

United States, Department of State

1981 *34th Annual Report to the United Nations, Trust Territory of the Pacific Islands*. Washington, D.C.

Zwart, Fritz H.A.G.

1968 *Report on the Census of the Population, 1966*. Suva: Government Press.

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